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MAY 8
1941

Annual Meeting

NATURAL GAS
Section

American Gas Association

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# The Oil and Gas Journal

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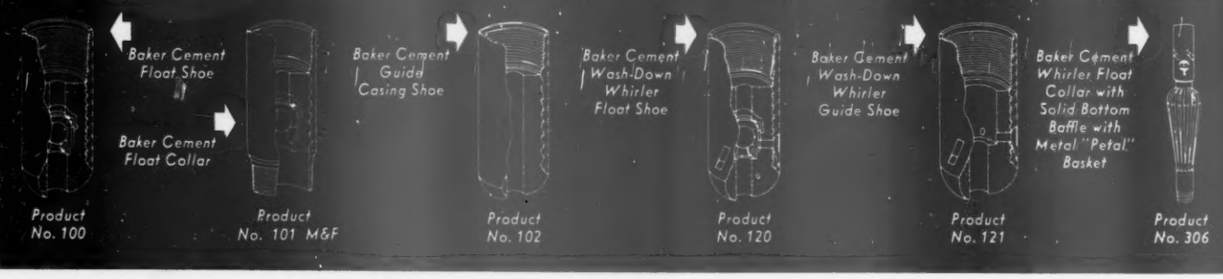
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# Trends

## Tanker Shortage Sharing Interest With Crude Rise

ADVANCES of 10 cents in Michigan, 5 cents in Kentucky and 7 cents in southern Ohio maintained interest of the industry this week in the crude-oil market. Vying for attention was the United States Maritime Commission action in requisitioning 50 oil tankers for service under provisions of the lend-lease act in maintaining necessary supplies to Great Britain. Diversion of the 50 tankers from the United States fleet to British service places more of a strain than ever on the industry in maintaining delivery of normal supplies to the East Coast areas.

CRUDE PRODUCTION *3,498,620 bbl. daily average—down 236,320 bbl. One year ago 3,683,169 bbl.*

CRUDE STOCKS *266,149,000 bbl. as of April 26—up 678,000 bbl. One year ago 256,670,000 bbl.*

GASOLINE STOCKS **96,328,000 bbl. as of May 3—down 319,000 bbl. One year ago 103,389,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *94,414,000 bbl. as of May 3—down 318,000 bbl. One year ago 102,490,000 bbl.*

GAS OIL AND DISTILLATES *30,309,000 bbl. as of May 3—up 766,000 bbl. One year ago 25,294,000 bbl.*

REFINERY RUNS *3,735,000 bbl. daily week ended May 3—up 60,000 bbl. One year ago 3,505,000 bbl.*

*Includes 7,091,000 bbl. aviation motor fuel, up 169,000 bbl. Year ago 5,200,000 bbl.

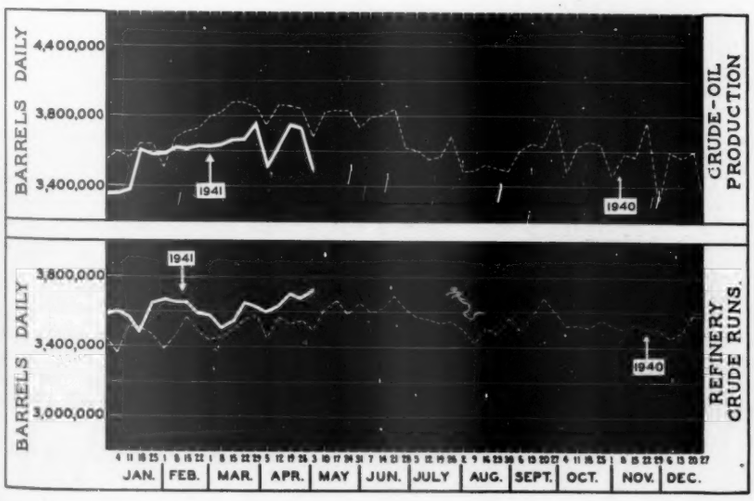
The areas receiving last week's crude advances were among those participating in the general increase of April 1, but they, along with Illinois and Indiana, are in the general middle-western area where demand has risen sharply at a time when production is falling. The combination presents a set of conditions in which competition for crude connections is the keenest witnessed in several years.

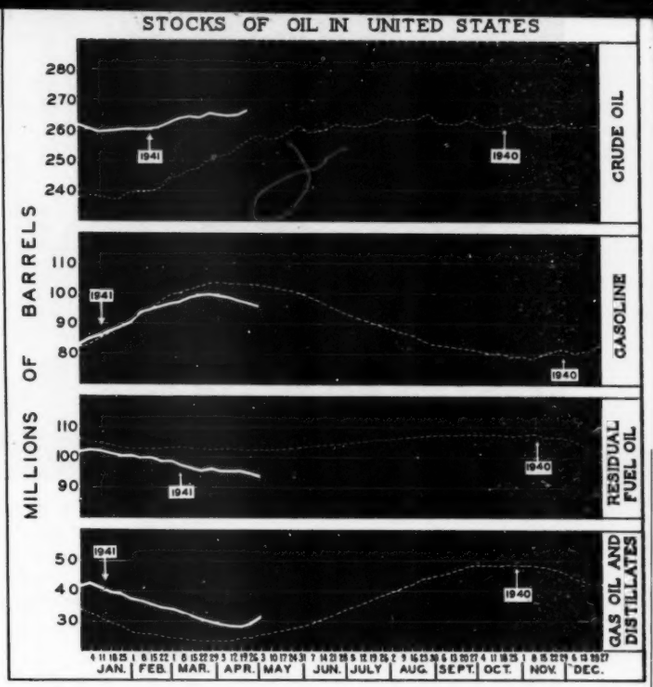
There were no new moves of more than regional scope in the refinery market this week. Tone of the price structure is strong in all centers of primary supply. One of the most potent stimulants behind the refinery-gasoline market is the stock position of automotive-motor fuel. Statistics show that the domestic supply of automotive-engine gasoline is about 10,000,000 bbl. less than it was a year ago. Part of this year's shorter supply of automobile-engine gasoline is accounted for by the fact that the industry is now carrying nearly 2,000,000 bbl. more aviation gasoline.

Companies owning tanker fleets and depending on deep-water transportation for moving crude and refined products from the Gulf Coast to the eastern seaboard are holding a series of meetings this week to consider the changed circumstances. Earlier, consideration had been given to the problem of moving Texas and Louisiana petroleum to the eastern coast as a possible eventuality in case the coastwise shipping lanes should become closed or if tanker capacity should become inadequate to meet the expanded demand.

There are a variety of ways in which the problem can be solved, including more extensive use of inland waterways, railroads and a limited amount of idle pipe-line capacity. Indications are that the first move will be to engage the maximum pipe-line capacity and possibly augment these facilities east of the Mississippi River, where the pinch is most acute.

Another potential development in the moves to aid the British with tankers is that refiners in this country may be called upon to supply larger quantities of petroleum products because of quality and shorter hauls.




### DAILY AVERAGE PRODUCTION FOR WEEK

| | May 3, 1941 | Bur Mines May est. of demand | May state allowables | Apr. 26, 1941 |
|---|---|---|---|---|
| Arkansas | 72,350 | 83,900 | 76,673 | 71,830 |
| California | 584,250 | 598,100 | 571,000 | 601,975 |
| Eastern fields | 105,400 | 126,200 | ..... | 120,200 |
| Illinois | 323,300 | 336,100 | ..... | 327,345 |
| Kansas | 209,100 | 213,900 | 217,900 | 213,400 |
| Louisiana | 307,525 | 320,300 | 320,324 | 306,050 |
| *North Louisiana* | *72,075* | ..... | ..... | *70,800* |
| *Louisiana Gulf Coast* | *235,450* | ..... | ..... | *235,250* |
| Michigan | 38,905 | 40,000 | ..... | 37,100 |
| Mississippi | 28,440 | 22,900 | ..... | 27,635 |
| Nebraska | 4,300 | 4,800 | ..... | 4,150 |
| New Mexico | 110,730 | 113,900 | 114,000 | 110,750 |
| Oklahoma | 413,900 | 440,000 | 400,000 | 415,075 |
| Rocky Mountain states | 101,570 | 117,400 | ..... | 104,230 |
| Texas | 1,199,750 | 1,382,200 | 1,417,222 | 1,395,200 |
| *East Texas* | *304,000* | ..... | ..... | *374,000* |
| *West Texas* | *210,250* | ..... | ..... | *248,550* |
| *North Central Texas* | *125,800* | ..... | ..... | *130,450* |
| *East Central Texas* | *74,950* | ..... | ..... | *77,150* |
| *Texas Panhandle* | *76,850* | ..... | ..... | *80,600* |
| *Texas Gulf Coast* | *329,350* | ..... | ..... | *391,050* |
| *Southwest Texas* | *78,550* | ..... | ..... | *93,400* |
| Total United States | 3,498,620 | 3,799,700 | ..... | 3,734,940 |

Total production, Jan. 1-May 5, 1941.... 418,178,871 bbl.
Same period last year ..... 435,282,816 bbl.

*American Gas Association, opening session, Monday morning. E. H. Poe, secretary, Natural Gas Section, A.G.A.; H. Carl Wolf, president, Atlanta Gas Light Co., Atlanta, Ga., chairman, industrial and commercial gas section, Natural Gas Section, A.G.A.; D. A. Hulcy, president, Lone Star Gas Co., Dallas; John Temple Graves, editor, The Birmingham Age-Herald; H. D. Hancock, Gas Advisers, Inc., chairman, Natural Gas Section, A.G.A.; Thomas J. Strickler (speaking), vice president, Kansas City Gas Co., Kansas City, Mo., and president, American Gas Association; J. French Robinson, president, East Ohio Gas Co., vice chairman, Natural Gas Division, A.G.A., who was nominated chairman; and E. L. Rawlins, Union Producing Co., chairman, producing division, Natural Gas Section, A.G.A.*

# Natural Gas Places Support of Defense As No. 1 Objective

By C. O. WILLSON

DALLAS, Tex., May 6.—The natural-gas industry is prepared to do its part in making its products available to the defense program and at the same time it will be able to take care of the customers who through the years have made possible its steady growth.

This program for the future sounded at the opening session Monday of the thirty-sixth annual convention of the Natural Gas Section of the American Gas Association being held here this week, was approved by more than one thousand in attendance from all parts of the United States and Canada.

*E. F. Schmidt, vice president, and J. L. Foster, general superintendent, Lone Star Gas Co., Dallas; H. P. Boncher, Dresser Manufacturing Co., Bradford, Pa.*

"The president of the United States has recently been quoted in the press to the effect that these were trying times and that America would have to forget about 'business as usual'," said D. A. Hulcy, president of the Lone Star Gas Co. of this city in a welcoming address at the opening meeting Monday. "I do not feel that this statement applies to the natural-gas industry. We will continue 'business as usual' plus discharging our responsibilities in connection with the national defense or any other job that may be given us," he added.

Other speakers during the 3-day convention expressed similar viewpoints placing the support of the defense program as the "No. 1 job" of the natural-gas industry but at the same time expressing confidence that the industry could provide adequate supplies for industries, utilities, home owners and others who rely on the natural-gas industry for fuel.

### Record Business

"The progress of the natural-gas industry is indicated by substantial increase in volumes of gas produced and sold during the past year in comparison with previous years," Harry D. Hancock, Gas Advisers, Inc. (Cities Service), chairman of the Natural Gas Section, said in opening the convention Monday. "Preliminary estimates," he said, "indicate that 2.6 trillion cubic feet of natural gas were produced and marketed for all purposes during 1940. Pipe-line and distributing companies during the year sold to 7,763,400 customers representing a population of 35,000,000 people, over 1.4 trillion cubic feet of natural gas for which was paid more than $448,000,000. The natural-gas industry has devoted to this service an investment in excess of 2.4 billion dollars." Other high points of Chairman Hancock's address appear on Page 23 of this issue.

### President's Address

Thomas J. Strickler, vice president of the Kansas City Gas Co., Kansas City, Mo., and president of the American Gas Association, stressed both performance and public relations in his talk to the natural-gas operators. He said in part:

"We have been asked by the authorities to produce, and we have made good. In the meantime our normal services have been continued with their accustomed efficiency. When I review the industry I can not escape the conclusion that we owe an obligation to the public to tell it what we are doing. In this world it is singularly easy not to get credit.

"We deserve credit for past and present performance and we should solicit it. Remember, an informed public is generally a sympathetic and appreciative public. People today are thinking more about national defense than any other subject. I recommend that we keep in step with this thinking."

President Strickler cited several instances in which gas companies had taken advantage of the opportunity to inform their customers and the public generally regarding the part they were playing in the national-defense program and other developments in which there is public interest. He concluded:

"I suggest that we approach the subject by asking ourselves this question: What is it that we want the public to know about us in these days when the nation is swept along by irresistible currents?

"My answer would be something like this: First, we want the public to know the truth. We want to be accepted for what we are—good, law-abiding, patriotic citizens engaged in a business that is not only necessary to the American standard of living but is vitally important in making defense invincible. We want the public to know that we are nice folks to do business with, that we are a credit to the community and an asset, and that we are experts at our jobs.

"There is much to gain by conveying this knowledge to the various communities we serve. And if my personal observation is worth anything I believe the time was never more appropriate to do it than right now."

### Robinson Nominated Chairman

On Tuesday, J. French Robinson, president and director of East Ohio Gas Co., Cleveland, Ohio, was nominated as the next chairman of the Natural Gas Section, and B. R. Bay, president, North-

ern Natural Gas Co., Omaha, Neb., was nominated for vice chairman. This is equivalent to election, which will take place at the annual American Gas Association meeting in October. Mr. Robinson has been in the natural-gas business for 20 years, as it was in 1921 that he joined Peoples Natural Gas Co. as geologist and engineer. He was made president of the Peoples company and Columbia Natural Gas Co. in 1936, and late in 1940 was made president of East Ohio Gas.

Mr. Bay became president of Northern Natural in July 1938, when he resigned as vice president and general manager of Panhandle Eastern Pipe Line Co.

### More Pipe Lines

While not discussed in any of the formal sessions, lobby conversations indicate that one or more of the new pipe-line projects for which applications have been filed with the Federal Power Commission, will be under way within the next few months. These proposed lines include new systems from Louisiana and Texas through the southeastern states as far east as Philadelphia and New York. Other lines are proposed north from the southwestern fields to points in the Middle West.

It is expected that some of these projects will receive the active support of the Defense Commission. Some of the industries now engaged in defense contracts are handicapped by the fact that they do not have sufficient natural gas for fuel. In this connection it is also pointed out that supplies in West Virginia, Pennsylvania, Kentucky and other Appalachian points are not sufficient for the increased demands which have developed from all classes of natural-gas consumers. It is claimed that unless this situation is relieved with trunk-line supplies from the Southwest, home owners may be forced to curtail the use of natural gas as fuel in order to supply essential defense needs.

Reports here also revealed important looping programs under way with existing lines connecting southwestern fields with large consuming centers such as Chicago and Detroit. Due to these developments it is predicted that all demands for natural gas this year will show substantial increases over 1940.

All phases of the natural-gas industry's operations were closely studied in the several group conferences held during the 3 days. At the accident-prevention conferences at which W. H. Adams, safety director of the Manufacturers Light & Heat Co., Pittsburgh, Pa., presided, a panel discussion devised means to secure the maximum cooperation between management and employes in safety programs. Fire and explosion hazards under present operating methods were discussed as to causes and prevention. Considerable thought was given to the threat of sabotage during the present emergency with a representative of the Federal Bureau of Investigation participating in the conference.

Several group sessions were devoted to discussions as to how to better the industry's customers. H. Carl Wolf, president of the Atlanta Gas Light Co., Atlanta, Ga., presided at the industrial and commercial-gas sales conferences, and F. M. Rosenkrans, new business manager, Gas Service Co., Kansas City, Mo., was chairman of the meetings devoted to residential gas sales. The sessions on industrial and gas sales revealed that the needs of defense industries are rapidly increasing in importance as outlets for natural gas in several areas. The subjects discussed in these sessions included developments in the gas-engine field, boiler-installation codes, automatic controls and large-scale heating installations in several industries.

In homes and other buildings more attention is being given to air conditioning. It is felt that as the practical operating problems of these installations are ironed out, a large market for natural gas is assured which will also aid in balancing summer and winter requirements.

### Assail F.P.C. Power Request

The recent request to Congress of the Federal Power Commission for additional powers in regulating the natural-gas industry was strongly attacked by Roy C. Coffee, general attorney of the Lone Star Gas Co., in a talk Wednesday in which he discussed court decisions and commission orders affecting the natural-gas industry.

In its report to Congress the Power Commission sought exemption from court interference in carrying out its regulatory powers and it also seeks more power over rates and authority to consider functions in granting applications for new lines. Regarding this, Mr. Coffee said:

"It simply means that the commission sets itself up as the great tribune of the people to determine and administer justice and right under our new social and industrial order. The courts are out. It means that they are no longer the great constitutional tribune of the people. The courts and your constitutional rights must go under our new social and industrial order for they are but obstacles to these great executive tribunes. If this is, or becomes, the established rule, then executive bureaucratic dictatorship in this country becomes complete, final and unassailable."

The conferences devoted to transmission were widely attended by operators and engineers as well as those engaged in research and development work. Julian I. Foster, general superintendent of the Lone Star Gas Co., Dallas, presided at the transmission conferences Tuesday at which the latest developments which have a bearing on flow efficiency in pipe lines were discussed.

*J. T. Creveling, president, Panhandle Eastern Pipe Line Co., Kansas City, Mo.; F. A. Taylor, Kansas City, Mo., and H. C. Price, H. C. Price Co., Bartlesville, Okla.*

B. M. Laulhere, Southern California Gas Co., presented an interesting paper on weather forecasting in relation to gas dispatching. He concluded: "With the weather service now available it would be of invaluable help to the dispatcher to receive hourly reports from strategic locations covering the entire system. These reports should include atmospheric temperature, wind direction and velocity, rainfall and humidity data. These reports should be tabulated and posted by a student of meteorology who would then make a report to the gas dispatcher as to whether any deviation from the posted weather forecast is to be anticipated, and the extent of this deviation and

*(Continued on Page 46)*

*Left: In charge of the heavy work at convention. Seated: H. D. Hancock, chairman; E. H. Poe, secretary, and J. French Robinson, vice chairman, Natural Gas Section, A.G.A. Right: Maurice White, vice president, Mobile Gas Service Co., Mobile, Ala.; Paul Taylor, vice president, Consolidated Electric & Gas Co., New York City, and Peter J. Brown and H. T. Strange, Mobile Gas Service Corp., Mobile.*

# SPARKS . . . FROM THE NEWS

**OUT OF SEASON:** Defense leaders were told last week that dismemberment would devitalize the oil industry. A logical conclusion, considering the finely balanced mechanism.

**SABOTAGE:** A practice developing voluntarily among refiners is for a local group of executives and key operators to discuss methods for identifying sabotage as it might be practiced in their plants. A study of this problem starts with plant personnel.

**BUMPER CROP:** Conventions are epidemic in the oil business this month. An observer notes a more serious aspect than usual, as men gather to consider, to exchange views, and to learn.

**THE SILVER LINING:** Mexico is selling the British oil which she expropriated from them instead of giving it to the Axis.

**GROWING PAINS:** No wonder the gas industry is the target for all sorts of regulation. It has doubled its size in 15 years.

**WHY TRAVEL?** Distant fields may look green but the wildcatters who stay close to old producing areas seem to be eating.

**STRIKE THREE:** Oklahoma had its third major strike of 1941 this week just as the fear set in that the state was nearing the end of its drillable locations.

**NEEDLESS WORRIES:** Refiners who wonder what will happen to aviation-gasoline manufacturing capacity after the war see a partial answer. Nine superclippers are soon to be started. Each plane will have four motors and each will be a fourth larger than any aviation engine now in use.

**NEW STYLE ARCHITECTURE:** Recent actions of state legislatures, such as Georgia, Wyoming, Texas, and Oklahoma, indicate that domes on state capitols are outmoded. They should be replaced by bottlenecks.

**WHERE DO WE STAND?** Repeated statements are being made by refinery executives and engineering companies that jobs are being delayed because of a lack of minor metal parts. The refining industry should stand high in the "priorities" list.

## TIGHT-ROPE ARTIST . . .

*Blowouts are not common in rotary drilling but an escape line is always a comfort to the derrickman. The slide is clamped around the ⅝-in. line as soon as the man gets in the derrick; all he needs to do in case of emergency is slip his leg through the loop, grab the hand-hold and the handle, and shove off. Nature takes care of the rest. To slow down or stop, the man simply grips the upper and lower halves of the handle with his right hand and squeezes. To add verisimilitude, the picture was taken on a well which did blow out several months ago but which is now under control*

**AN INVITING PATTERN:** Economies of unit operation are behind most such agreements. Interests in the Paloma (California) field have this in mind.

**NO MENACE:** The record of producers at Louden leads the industry to believe that if Devonian oil is found there it will not flood the market.

**TRUMPING A TRICK:** Representative Cole may make the lead that will ruin the railroads' pat hand in Georgia. Unblock pipeline rights-of-way by federal law.

**NEW EXPERIENCE:** Refinery sales managers are staying away from their offices to avoid telling their long-established customers they can't supply all the material on time. What a change!

**IN A NUTSHELL:** Chances of starting secondary - recovery projects in the Oklahoma City Wilcox zone have boiled down to whether a disinterested state government can determine in a few weeks' time what effect the highly technical problem will have on the "common weal."

# Natural Gas Industry Confident Of Meeting Its Responsibilities

By H. D. HANCOCK
Chairman, Natural-Gas Section, A.G.A.
President, Gas Advisers, Inc.

**In his address before the A.G.A. convention, a part of which is given here, Mr. Hancock deplored the exercise of unreasonable regulatory powers, which are unjust and injurious to the industry and to the public alike. He reiterated that the industry does not object to equitable governmental regulation, where and when the public interest requires. He declared that a sound basis of optimism exists in the industry's determination to seek the best solutions to its problems through the hard methods of toil and perseverance.**

THE principal use of natural gas is as a fuel and source of energy, and that will undoubtedly continue to be its principal use in the future. However, the possibility of a synthetic-organic chemical industry based upon natural gas as a raw material became apparent many years ago and, as stated in Bureau of Mines Information Circular 7108, entitled "Utilization of Natural Gas for Chemical Products," this industry is large and growing rapidly in importance. Although methane is the major component of natural gas, processes for converting it into other products are not yet economically feasible. However, methane is useful as a source of hydrogen, which is required for many chemical reactions. The higher hydrocarbon components of natural gas are being used in large quantity for the manufacture of a long and rapidly growing list of products, some of which are not obtainable commercially from any other source, and many of these products are considered strategic raw materials.

Space heating is one of the most important markets in the natural-gas industry from the standpoints of volume of business and the nature and magnitude of the facilities required to meet the peak-load requirements of this type of business. Heating, however, is only one phase of the conditioning of air for human comfort or for industrial process use. There has been a gradual improvement in complete winter air-conditioning equipment which has resulted in an expanding market, and the expansion of the market has in turn stimulated further improvement in equipment. While interest in summer air conditioning has developed more recently, it is expected that continuing improvements in equipment will likewise result in a broadening of the market and that this will in turn result in the further stimulation of efforts to improve all of the features which bear on customer acceptability.

### Summer Air Conditioning

Attainment of the objective in the summer air-conditioning field depends on the availability of equipment with which to meet the economic and functional needs of the mass market—the same extent of market that the industry now supplies with gas for cooking, water-heating and space-heating purposes. Gas-consuming summer air-conditioning equipment must be as acceptable to customers generally as gas-fired space-heating equipment is at the present time, and both cost and performance enter into acceptability. Much progress has been made in developing acceptable equipment but much more remains to be accomplished. Equipment manufacturers cannot be expected to devote themselves to developments designed to meet the requirements of the mass market except as the attainment of this extent of market is approached through the successive stages of development of both equipment characteristics and sales volume. In order to assist the equipment manufacturers most effectively, it will be necessary to acquire an understanding of the manufacturers' viewpoint and to extend substantial support in their program of development. Many organizations have cooperated and are continuing to cooperate with manufacturers of this equipment but more progress can be made if the number of cooperating organizations is substantially increased. It will be helpful if each of you consider whether you are doing all that can be done to stimulate activities in your company which may be of assistance in accelerating the solution of this important problem.

The substantial and continuing interest in gas-consuming summer air-conditioning equipment is evidenced by the exhibit at this convention of the units developed by various manufacturers. Also, as will be discussed at other sessions of this convention, recent steps have been taken towards the finding of solutions to some of the basic problems in the summer air-conditioning field through the activities of a special committee of the American Gas Association. This committee will direct the studies, research and tests necessary to develop a comprehensive understanding of the problems involved in the production and marketing of such equipment. This group is proceeding actively with its program which will include the preparation of a report on which may be based decisions as to the quality of equipment now available and the feasibility of undertaking a sales promotion and publicity campaign.

### Domestic Gas Sales

The residential gas-sales section is active in the execution of its comprehensive program designed to stimulate the sale of gas for all domestic purposes. Residential gas sales and the number of residential gas customers last year exceeded those of any previous year in the history of the industry. Certified-performance gas-range sales for the first 2 months of this year were 72 per cent higher than in the same period last year. It is also significant that in a survey of 79,717 newly constructed homes in areas served with natural gas, it was reported that 92 per cent used natural gas for cooking; 94 per cent used natural gas for water heating; 88 per cent used natural gas for house heating, and 10 per cent reported the installation of gas refrigerators.

One of the important activities of the residential gas-sales section is devoted to the further extension of home service usefulness. Of particular importance at this time is the employment of home service departments to further national-defense preparations through acting as sources of information in their communities on correct food preparation, the use of surplus foods and assistance in all projects to better community health.

The aggressive spirit actuating the natural-gas industry and its practical application is exemplified in the strong support given to the gas industry's national advertising program and the excellent manner in which it has followed through by means of effective local advertising tie-in. From the inception of this prestige-building campaign, designed to benefit the entire industry, practically every natural-gas operating unit has given constructive and enthusiastic support. As the program is about to enter its sixth consecutive year, it is becoming increasingly evident that it has been productive of good results of both direct and indirect character. Aside from its more obvious beneficial influence on our domestic and industrial business, this campaign has been a powerful factor in further stimulating morale within the gas industry and in creating a higher estimate of the industry on the part of customers, investors, competitors and the general public. It is certain that this progress will continue and accelerate as the program continues to function.

The progress of the natural-gas industry is indicated by the substantial increase in volumes of gas produced and sold during the past year in comparison with previous years. Preliminary estimates indicate that 2.6 trillion cubic feet of natural gas were produced and marketed for all purposes during 1940. Pipe-line and distributing companies during that year sold to 7,763,400 customers, representing a population in excess of 35 million people, over 1.4 trillion cubic feet of natural gas for which was paid more than $488,000,000. The natural-gas industry has devoted to this service an investment in excess of $2,400,000,000.

### Natural-Gas Rates

The rates of natural-gas enterprises involve two principal requirements: First, that they be sufficiently attractive to customers, in coordination with other factors, to result in securing and retaining the business and, second, that they be compensatory. While much may be said in regard to the marketing factors involved in the first requirement, these comments will be confined to the special features of natural-gas enterprises which bear on the second requirement. The natural-gas industry is essentially an investment business in that it has a high ratio of property value to annual gross revenue and the total of return and of all reserve requirements is among the principal items of cost. Many different kinds of property are utilized and consumed in rendering service to customers and an expense equal to the return and reserve requirements represented by such utilization and con-

sumption of property value is incurred as surely as if current supplies in equivalent amounts were purchased and currently used in rendering service. Since return and reserve requirements comprise so large a part of the total cost of conducting the business, a natural-gas enterprise may continue to operate and render efficient service for a period of time even though rates are not compensatory. These characteristics of the natural-gas industry are in contrast to those of many other industries which have low ratios of property values to annual gross revenues and in which inadequate revenue soon brings its own correction because current expenditures represent so large a portion of the total cost of doing business. To assure that rates in natural-gas enterprises are compensatory requires the design of rate schedules on sound principles, with due regard to the predominant investment feature of the business and the special risk factors involved, and to the securing of recognition of such principles from public authorities having jurisdiction.

It is not undertaken on this occasion to deal with the procedures necessary to achieve the objective of compensatory rates. The general principles involved have been repeatedly stated by the rate committee of the American Gas Association. The continued executive consideration necessary to translate these principles most effectively into the desired results is recommended. There is no doubt that much progress has already been made in securing recognition in the industry of the principles themselves and that their general application in practical rate making has been limited not so much by lack of belief in and understanding of these principles as by failure to translate belief into a sustained and united effort to bring about their general recognition. From the long-range standpoint it is likely that more has been lost by accepting conclusions based on temporary expediency than could have been lost by adhering to principles which we know to be sound. Convergence of efforts is urged with respect to those basic principles of pricing which are common in all branches of the industry. It is only by such united effort that recognition of the basic soundness of the principles can be obtained from regulatory bodies and the public generally. It is as important in the long run to the users of the service as to those who provide the facilities that rates cover all of the items of cost of rendering the service.

### Gains Achieved Through Science

The unparalleled material and cultural gains achieved from the long-range standpoint in the two great democracies represented at this convention have been attributed by many to the growth of science and engineering and their application to the well-being of mankind. Others, on the contrary, are of the opinion that science has not been an aid to civilization on the ground that it places too much emphasis on material things and emphasizes too little the greater values of life which are not revealed by science alone. Also, some claim that the application of science has already created such powerful agencies of destruction and may in the future unleash so much more terrible destructive forces that humanity would be better served had there not been such supreme efforts to attain the ultimate in science and engineering. In this latter connection, if consideration is given to the application of science and engineering in the preparation of national defense, it is plainly indicated by world events of today that a nation which fails to infuse science and technology into every phase of its national economy is left so inferior in defensive power that it may become an object of military aggression.

The preponderance of evidence supports the conclusion that society has been enriched and the well-being of mankind advanced through the contributions of science and engineering and that their continued development and application will accelerate material and cultural improvements in the years to come. It is of particular significance to the natural-gas industry that one of the most important of these contributions, one which is perhaps the primary cause of fundamental changes in our economy as well as those of other parts of the world, has been the discovery and utilization of practical means by which heat energy can be made to do man's work for him.

The long-range material and cultural progress above mentioned did not take place uniformly or continuously. It was marked by eras of rapid gains and interrupted by depression periods. During the period of the most serious depression in our history extraordinary powers have been conferred on regulatory bodies and the exercise of such powers, with rapid changes in and uncertainties concerning forms and degrees of regulation, has impacted upon industry to an extent which has materially lessened the effectiveness of the efforts of industry to do its full share in assisting in recovery from the depression. At this time there are superimposed on our national economy the requirements of the greatest national-defense program in our history. Under present conditions it would be idle to claim that progress towards improvement in our general economy will be as fast as it would have been if such an important part of our resources were not devoted to defense purposes. Even if there were not a depression, such a defense program would inevitably retard our progress towards an improved general economy. However, the national-defense preparation involves, to a large extent, the same development and utilization of material and technological resources required for combating the depression. For this reason, those technological and engineering developments resulting from the national-defense effort, which are also useful in productive enterprises will, when applied in our general economy, assist in recovery from the depression and make a permanent contribution to the national welfare. To the extent that this takes place, the impact of the defense program on our general economy will in the long run be lessened.

The productive enterprises of our country constitute the foundation of both the national-defense program and the endeavors to achieve and retain gains in our general economy. It is in a freely operating economic system that such enterprises can best provide the means of assuring that our institutions will withstand all threats from within and without our borders. The presence of the catalyst of free endeavor in the application of all of our resources to all of these purposes is the best assurance of success. In order, therefore, to use our resources to the best advantage, productive enterprise should be released from undue regulation and restrictions. Furthermore, it is important that each branch of industry avoid the use—and discourage employment by others—of arguments based on aid in national-defense preparation in a way which distorts the relationship of the proposal under discussion to the defense program.

It may be said again, as in the past, that the natural-gas industry does not object to equitable governmental regulation where and when the public interest requires. The industry, however, deplores the exercise of regulatory powers in ways which are unreasonable and which are unjust and injurious to the industry, and, in the long run, to the public which it serves.

### Warns Against Overconfidence

Without resorting to overstatement it may be said that the natural-gas industry approaches the responsibilities, opportunities and problems of the future in a spirit of optimism It is encouraging to know that no part of this optimistic attitude is based on undue satisfaction with past accomplishments or complacency with respect to the future, because there is no more dangerous time in the history of an industry than when it reviews the past and contemplates the future in these ways. On the other hand, with the industry conscious of the increase in and urgency of its problems, all are alert and will use every means at their disposal to seek the best solutions. Mistakes, if made, are more likely to happen when it is assumed that the difficulties are either over or are too great to overcome, and it is encouraging to have the conviction that the industry will be subject neither to the overconfidence of the former nor to the defeatism of the latter.

It is at least reassuring to feel that on the course we are planning for the future "our feet will be guided by the lamp of experience." In these days of low economic visibility, however, there are few markers along the road previously traveled which indicate plainly the best route to seek in the future. Furthermore, the factors likely to affect the natural-gas business most in the future may come from sources entirely outside the industry, and hence it is necessary that we widen our horizon and appraise many factors not previously recognized as immediately important to the industry.

While the problems confronting the natural-gas industry at the time of this thirty-sixth annual meeting are increasing in number, magnitude and complexity, there is determination to seek the best solutions through the hard method of toil and perseverance. A sound basis for optimism is thus furnished by the conviction that the industry's problems will be approached in this way and that we are inclined neither to overconfidence because of past accomplishments nor to the other extreme of defeatism because of lack of faith in ourselves, our industry or our national economy.

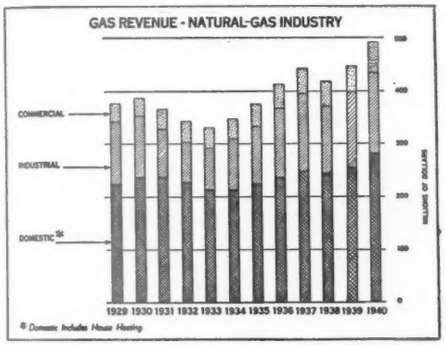
## Additional A.G.A. Features in This Issue


- Report of the meeting of the association at Dallas—Page 20.
- Figures relating to the growth in consumption of natural gas with particular emphasis on expanding industrial demand—Page 25.
- Results of first winter's operation of East Ohio Gas Co.'s liquefied natural-gas plant at Cleveland, Ohio—Page 57.
- Use of cathodic protection as a possible means of preventing corrosion of gas-well casing—Page 59.

# Growth of Industrial Demand Promises Record Gas Year

NEW YORK, May 6.—Sharp expansion of industrial consumption of natural gas promises another new high record this year for the business. Details are available on only 1 month of the new year but they point conclusively to the accuracy of record-demand forecasts. Growth of consumption has been particularly rapid in eastern industrial centers where manufacture of goods in the defense program is now under full headway.

Supporting data are not yet available but gas men in the eastern section agree that demand this summer promises to exceed all previous peak-load requirements for the winter season. These predictions are based on demand that shows increases ranging up to 15 per cent in industrial consumption. The largest gain in industrial demand reported for January was in California where much of the aviation-manufacturing expansion has taken place. Out of 22,679,599,000 cu. ft. of natural gas sold in California during January, 8,198,269,000 cu. ft. went to industrial consumers. For the entire country, industrial gas sales in January totaled 65,134,000,000 cu. ft., an increase of 8.3 per cent


GAS REVENUE - NATURAL-GAS INDUSTRY
COMMERCIAL
INDUSTRIAL
DOMESTIC*
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940
* Domestic Includes House Heating

*Domestic consumers source of most revenue*

over the same month in 1940. Because of declines in domestic and commercial sales of natural gas during January total consumption for the month of 151,963,100,000 cu. ft. was only 1.4 per cent greater than a year ago.

Revenue from industrial sales of gas now account for about 25 per cent of the total income and for nearly 50 per cent of the volume distributed. In Pennsylvania alone, where the giant steel industry and its satellites account for much gas consumption, the increase of January sales to industrial accounts was 13.3 per cent. Industrial sales of natural gas in Pennsylvania during January aggregated 5,269,974,000 cu. ft. out of a total distribution of 9,644,285,000 cu. ft. Industrial gas sales in Ohio increased 11.2 per cent to 4,882,662,000 cu. ft. in January. A substantial increase of 13.8 per cent in industrial gas distribution was registered in Kansas while this phase of the business gained 5.1 and 4.5 per cent, respectively, in Texas and Oklahoma.

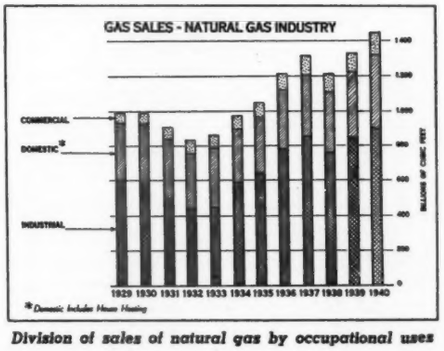
An even more accurate barometer on expansion of natural-gas demand in the eastern part of the country than the sales figures for January is the record on drilling and completion activity in producing areas east of the Mississippi River. During the 4 weeks ended April 26, there were 206 gas wells completed in the entire country and 144 were in areas east of the Mississippi. Total gas-well completions were 121 for the same period a year ago. The Appalachian area received 74 of the 206 completions, Ohio had 36, Kentucky gained 18, Michigan 9, and the remainder were in Texas, Oklahoma, California and other scattered areas. The price of gas at the wells in the Appalachian area ranges up to 50 cents per 1,000 cu. ft. At the top price or down to the market of 8 cents per 1,000 cu. ft. in the Elk-Poca field of West Virginia it is a profitable operation to drill wells for gas in the Appalachian area that would be short of economic minimums in other parts of the country more distant from the industrial consuming centers.

### Significance of Gains

Results of the first 4 months in natural-gas operations and the prospects for remainder of the year become even more significant when considered in light of a substantial gain for the industry in 1940.

Preliminary estimates indicate that 2.6 trillion cubic feet of natural gas were produced during 1940. This figure includes amounts used for the manufacture of carbon black and for field purposes.

The total utility sales of natural gas amounted to 1,441,354,100,000 cu. ft. This was an increase of 8.9 per cent over the utility sales of 1939. Decided increases in all classes of these sales were recorded. The following table showing customers, sales and revenue for 1940, as compared to those of 1939, illustrates the continuance of the industry's record of progress and expansion.


GAS SALES - NATURAL GAS INDUSTRY
COMMERCIAL
DOMESTIC*
INDUSTRIAL
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940
* Domestic Includes House Heating

*Division of sales of natural gas by occupational uses*

| Customers: | 1940 | 1939 | Per cent change |
|---|---|---|---|
| Residential | 7,156,700 | 6,892,400 | +3.8 |
| Commercial | 560,600 | 543,000 | +3.2 |
| Industrial | 43,700 | 41,400 | +5.6 |
| Miscellaneous | 2,400 | 2,200 | .... |
| Total | 7,763,400 | 7,479,000 | +3.8 |
| Gas sales (M.c.f.): | | | |
| Residential | 419,424,900 | 371,603,000 | +12.9 |
| Commercial | 122,589,800 | 108,964,000 | +12.5 |
| Industrial | 880,901,000 | 826,843,000 | +6.5 |
| Miscellaneous | 18,438,400 | 15,948,000 | .... |
| Total | 1,441,354,100 | 1,323,358,000 | +8.9 |
| Revenue (dollars): | | | |
| Residential | 280,359,100 | 254,150,000 | +10.3 |
| Commercial | 55,419,400 | 50,059,000 | +10.7 |
| Industrial | 149,579,900 | 139,243,000 | +7.4 |
| Miscellaneous | 2,758,600 | 2,519,000 | .... |
| Total | 488,117,000 | 445,971,000 | +9.5 |

Approximately 183 billion cubic feet of natural gas, used as a fuel for generating electric power, is included in the 1940 industrial sales.

### Customers Total 7,763,400

Natural-gas service, at the end of 1940, was available in towns and cities with an aggregate population in excess of 35 million people. The total customers served numbered 7,763,400, or the largest number of services ever connected to the mains of the industry. These customers paid $488,117,000 in revenues throughout the year.

In order to maintain the high degree of service to which their customers have become accustomed, the services of 65,300 workers have been employed. The aggregate payroll of these employes amounted to $105,342,000. An interesting sidelight demonstrating a contribution towards better living and working conditions for their employes lies in the fact that today the average worker receives $4.31 more, and works 10 hours per week less than he did in the peak year of 1929.

The total investment in the natural-gas industry is $2,414,490,000. In recent years rather surprising comparisons were made when this figure was compared to similar figures of other industries. For example, last year it was pointed out that investment in the natural-gas industry al-

*(Continued on Page 46)*

**MILES OF MAIN IN USE BY THE NATURAL-GAS INDUSTRY IN THE UNITED STATES, 1933-39**

(Statistical Department, American Gas Association, March 24, 1941)

| | 1939 | 1938 | 1937 | 1936 | 1935 | 1934 | 1933 |
|---|---|---|---|---|---|---|---|
| Transmission | 84,700 | 83,000 | 81,600 | 80,500 | 79,600 | 78,800 | 78,200 |
| Distribution | 105,600 | 103,600 | 101,800 | 98,500 | 95,400 | 94,200 | 92,800 |
| Total | 190,300 | 186,600 | 183,400 | 179,000 | 175,000 | 173,000 | 171,000 |

**EMPLOYES AND PAYROLL OF NATURAL-GAS INDUSTRY IN UNITED STATES, 1929-39**

(Statistical Department, American Gas Association, March 24, 1941)

| Year— | No. employes | Annual payroll | Average No. hours worked per week | Average weekly pay |
|---|---|---|---|---|
| 1929 | 68,500 | $95,116,000 | 49 | $26.71 |
| 1930 | 60,800 | 85,096,000 | 49 | 26.92 |
| 1931 | 54,400 | 76,970,000 | 46 | 27.21 |
| 1932 | 51,600 | 70,595,000 | 46 | 26.31 |
| 1933 | 52,500 | 68,668,000 | 43 | 25.15 |
| 1934 | 57,300 | 79,773,000 | 39 | 26.77 |
| 1935 | 59,200 | 87,695,000 | 40 | 28.48 |
| 1936 | 65,800 | 95,913,000 | 39 | 28.04 |
| 1937 | 66,300 | 99,043,000 | 40 | 28.73 |
| 1938 | 64,000 | 103,488,000 | 40 | 31.10 |
| 1939 | 65,300 | 105,342,000 | 39 | 31.02 |

# Automotive Fuel Stocks Fall

By H. STANLEY NORMAN

CURRENT position of refinery gasoline is about 60 days ahead of the 1940 index. There is no sign of early abatement in domestic demand which the Bureau of Mines shows to have been 12.4 per cent greater during the first 2 months of this year than the same period last year. The longer-term view, however, is less optimistic. A comparable position of the April 26 gasoline inventory reported by the American Petroleum Institute was not reached in 1940 until the last week of June. This conclusion embraces segregation of aviation-gasoline stocks from automobile-engine fuel, placing the inventory of material in the latter classification at 89,715,000 bbl. on April 26. The actual total of all gasoline reported by the A.P.I. at 96,647,000 bbl., included 6,932,000 bbl. of aviation motor fuel. A year ago, when all motor fuel in the hands of the domestic refining industry totaled 103,587,000 bbl., aviation-gasoline stocks aggregated 5,118,000 bbl., leaving 98,469,000 bbl. of automobile-engine fuel.

A.P.I. reports show that 3,080,000 bbl. of motor fuel were removed from storage between March 29 and April 26. In its forecast of April demand issued in March, the Bureau of Mines had anticipated an addition of 1,300,000 bbl. to gasoline stocks during April.

The increase of 12.4 per cent in domestic motor-fuel demand obtaining through the first 2 months will not prevail for the entire year unless revised estimates on consumption prove too conservative. The Bureau of Mines now calculates the probable 1941 demand at about 10 per cent above last year which will be about 1,771,440 bbl. daily average for the 12 months. Export demand will probably range between 40,000 and 45,000 bbl. daily, although there are indications that Great Britain may start drawing a greater share of her requirements from the Western Hemisphere, which may tend to stimulate shipments from this country over the next several months. Provisions of the lend-lease bill tend to equalize the factors of trading with this country with the advantages previously centered in South America where sterling was acceptable in payment.

### Developments Contain Warning

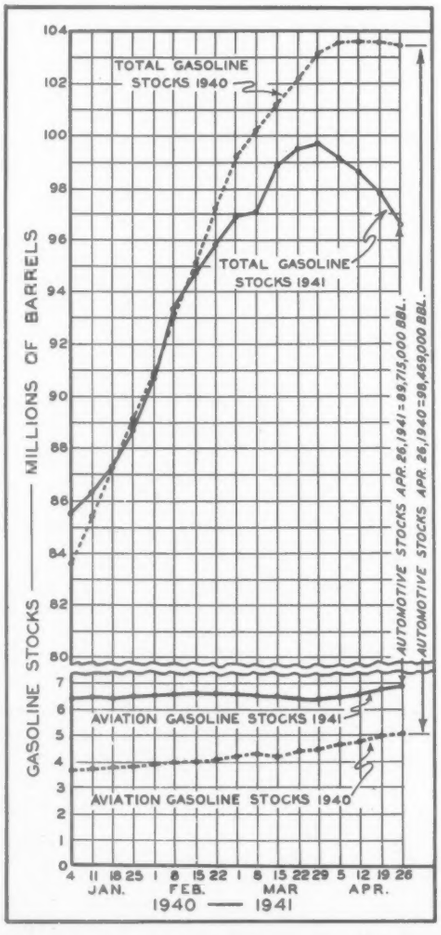
Several developments in recent weeks have served to warn that caution in operations of the oil industry cannot be abandoned. In fact, the agreement entered into between automobile manufacturers and government officials representing the Office of Production Management, involving a 20 per cent reduction in the manufacture of passenger automobiles next year is a signal in itself that next year may develop conditions considerably different from those now existing and projected over remainder of 1941. Since 1941 is likely to be another 5,000,000-car year for the automobile industry, the reduction of 20 per cent in manufacturing private vehicles in 1942 will mean a cut of maximum output to approximately 4,000,000 new automobiles. Of course, there may be further calls made on automobile manufacturers before this year closes in the matter of converting their facilities to production of essential defense materials. Too, there is the possibility that restrictions may become more severe on the use of steels in the production of commodities for private consumption, which might have the result of further contraction of automobile manufacture. Since about 89 per cent of domestic motor-fuel consumption is accounted for by automobiles, including passenger cars, trucks and buses, the importance of automobile output to gasoline demand is readily apparent. There will be 2,500,000 to 3,000,000 cars retired from service during 1941, which means that only 1,000,000 to 1,500,000 of next year's indicated automobile production will represent an increase of active vehicles. The average consumption of gasoline per vehicle in 1940 was 742 gallons compared to 729 in the preceding year.

Exigencies of the defense program indicate that commercial-type vehicles will engage a larger percentage of the automobile industry's manufacturing facilities. These types of vehicles consume substantially larger quantities of motor fuel than the passenger cars. Average consumption per truck in operation last year was 1,107 gal. and buses used an average of 5,036 gal. per unit. Consequently, there likely will be an increase in the average consumption per vehicle next year even though restrictions are imposed on automobile manufacturing operations.

### Purchasing Power Factor

Still another consideration will be the purchasing power of individuals operating automobiles. Recent statistics from the Department of Labor show that earnings of factory workers have increased about 4 to 4.5 per cent since this time last year. This increase in earnings has been influential in elevating the rate of consumption of gasoline this year and will continue so until the burden of heavier taxes equalizes or nullifies the raise.

Details of the higher tax burden necessary to pay the defense bill have not been disclosed in Washington but Congress is giving preliminary consideration to a rise of 33 per cent. If the new tax bill carries an advance of these proportions it will react adversely on the purchasing power of the general public to an extent that is certain to affect consumption of motor fuel. Automobile Manufacturers Association reports show United States factory sales for the first quarter of this year to have totaled 1,498,604 units, including passenger cars and trucks, with March of this year estimated. This year's first quarter activity by automobile manufacturers was nearly 20 per cent ahead of 1940. Figures are not yet available but April automobile production was curtailed by strikes, particularly that at River Rouge where the Ford plant was idle a good part of the month. Automobile-industry economists have predicted that manufacturing activity remainder of this year is likely to fall behind comparable months of 1940. The changeover to 1942 models will start in parts of some automobile factories in May. Indications are that production of cars in August this year when output of 1942 models might be expected to reach a peak corresponding to October 1940, will be not more than 385,000 units.




*Showing the descent of automotive-gasoline stock curve since end of March*

**RELATIVE GASOLINE POSITION**

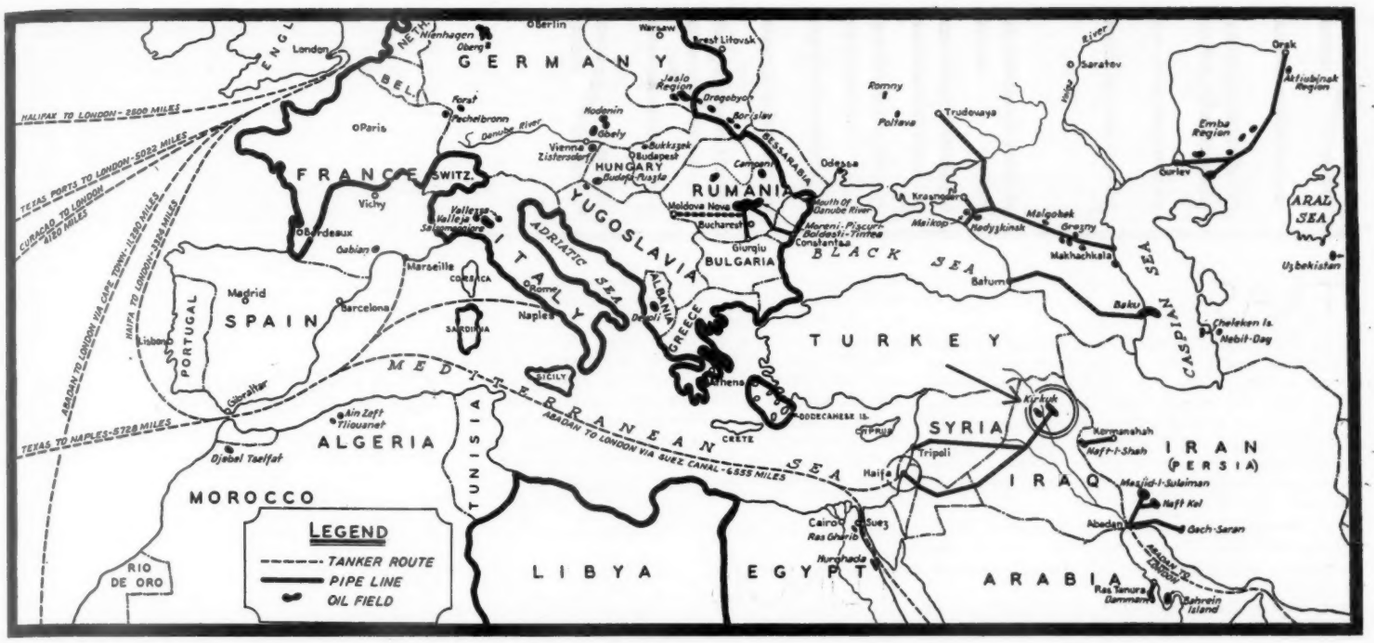
(Data in thousands of barrels)

| | Total gasoline stocks | | Aviation gasoline | |
|---|---|---|---|---|
| | 1940 | 1941 | 1940 | 1941 |
| January 4 | 83,650 | 85,530 | 3,674 | 6,370 |
| January 11 | 85,481 | 86,328 | 3,735 | 6,424 |
| January 18 | 87,312 | 87,351 | 3,796 | 6,478 |
| January 25 | 89,144 | 88,762 | 3,857 | 6,533 |
| February 1 | 90,975 | 90,864 | 3,918 | 6,587 |
| February 8 | 93,055 | 93,265 | 4,004 | 6,612 |
| February 15 | 95,135 | 94,741 | 4,091 | 6,631 |
| February 22 | 97,215 | 95,812 | 4,177 | 6,650 |
| March 1 | 99,295 | 96,917 | 4,264 | 6,669 |
| March 8 | 100,292 | 97,178 | 4,389 | 6,539 |
| March 15 | 101,289 | 98,979 | 4,261 | 6,547 |
| March 22 | 102,286 | 99,541 | 4,415 | 6,438 |
| March 29 | 103,283 | 99,727 | 4,570 | 6,462 |
| April 5 | 103,690 | 99,112 | 4,725 | 6,527 |
| April 12 | 103,656 | 98,654 | 4,880 | 6,696 |
| April 19 | 103,622 | 97,899 | 5,034 | 6,839 |
| April 26 | 103,587 | 96,647 | 5,118 | 6,932 |
| May 3 | 103,389 | ..... | 5,200 | ..... |

### Military Requirements Small

Maximum increased requirements in an all-out war effort have been estimated from 75,000,000 to 150,000,000 bbl. annually, the higher figure being only about 10 per cent of the petroleum industry's current domestic production. In generalized testimony before a congressional group recently, a spokesman for the military forces estimated the Army and Navy would need 140,000,000 bbl. in a full-scale war effort. This figure included about 9,000,000 bbl. annually of 100-octane gasoline for the Air Corps, 19,000,000 bbl. of other motor fuel and lubricants for the Army, and 36,000,000 bbl. of diesel and residual fuel for the Navy. Presumably, the other 66,000,000 bbl. covered miscellaneous products for various branches of the services and for the increased

*(Continued on Page 115)*




*Arrow shows direction of latest Axis pressure pointing to Iraq's Kirkuk field. Land areas within heavy borders are now under Axis control, containing all important European fields west of the U.S.S.R.*

# Axis Powers Apply Pressure On Near East Oil Supply

By J. P. O'DONNELL

NEW YORK, May 6.—The swift pace of the war between the Axis powers and the democracies is mirrored in the equally swift changes in the aspect of the international oil picture. At the beginning of this year Great Britain was apparently seeking to deliver a knockout blow to Germany by sustained bombing of her synthetic-oil plants, Greek armies were nearing Italy's Albanian oil supplies and the bombing of Rumanian refineries and transportation centers was expected momentarily. Today, 4 months later, Great Britain has suspended those air attacks, Italy's Albanian supplies are again secure and Germany can take Rumanian oil to the limit of transportation facilities.

Today, apparently, Germany is in a better position from an oil standpoint than at any time since the beginning of hostilities 20 months ago. In addition it appears that she will force the next theater of active warfare into the Near East where 15 per cent of the world's oil production originates and where incalculably vast reserves, awaiting only the construction of transportation facilities, exist. This region extends from the Russian Caucasus down through Iran and Iraq, on both sides of the Persian Gulf and westward to Egypt. This area could easily supply all of Europe's requirements under any circumstances.

Movement of Kirkuk oil to Haifa, via the main and southern sections of the Iraq pipe line, are reported to have been stopped completely by severance of the line. Substantial supplies of oil are stored at Haifa and consequently this vital source of British navy fuel is still available, although on a precarious basis. Dispatches from Turkey this week reported that Iraq troops had flooded the Qaiyarah field but details did not explain whether this move applied only to the surface.

British forces, supported by the deposed premier, are fighting to regain control of Iraq territory and its government and to oust the pro-Nazi regime before German aid materializes.

### Germany's First Objective Still Question

What Germany's first objective will be in this area is unknown but that it will soon be determined is almost certain. Iraq troops of Rashid Ali Al Gailani, pro-Nazi premier who assumed control of the country in a coup d'etat a month ago, fired what may be the first shots in the battle for Near East control when they clashed with British troops at Habinnayah last Friday. Developments elsewhere included: Large numbers of German "tourists" are reported to be in Syria; Von Papen, German ambassador, is shuttling between Berlin and Ankara with a German-Turkish treaty in prospect; German and Italian forces in Libya are reported increasing in number and material; a still-neutral Russia allegedly cut off oil shipments to the Reich and has massed troops on the Turkish and Iranian borders to the south and on the Rumanian and former Polish borders in the west in possible anticipation of a German attack.

Ninety per cent of Russian production originates in the Caucasian fields. These fields are divided into three sections: Azerbaidjan, including the prolific Baku field on the Apsheron Peninsula, in the southeast; the Grozny district north of Azerbaidjan, and the Maikop district west of Grozny. Pipe lines connect the Baku and adjacent fields with Batum on the Black Sea and Grozny and Maikop with the Black Sea port of Taupse and the northeastern Ukraine city of Trudovaya. Because of these pipe lines the Caucasian fields would be of more immediate value to Germany than the more southern Iraq, Iran and Saudi Arabia fields. The Caucasus area has upwards of 500,000 bbl. per day refining capacity

Iraq, regarded as the most likely objective, has two producing fields, Kirkuk and Qaiyarah, west of Mosul. The Kirkuk field, which normally produces 80,000 to 85,000 bbl. per day, the capacity of the twin pipe line to Haifa, Palestine, and Tripoli, Syria, is the more important. Qaiyarah, though drilled by more than 50 wells, has been kept virtually idle because of lack of transportation facilities. Its crude is heavy, averaging about 17° A.P.I. gravity. More than 50 wells, only two or three of which have been failures, have been drilled in the Kirkuk field, often referred to as the world's most efficiently developed. Half of these wells would supply all pipe-line requirements even before the Tripoli leg was closed in July 1940. The Kirkuk field is in the 35,000-sq. mile concession of Iraq Petroleum Co., and Qaiyarah in the 45,000-sq. mile concession of the British Oil Development Co., Ltd. Iraq's refining capacity is minor, sufficient only to supply domestic needs.

Iran's principal fields are Masjid-i-Sulaiman, Haft-Kel and Gach Saran which supply the Anglo-Iranian refinery at Abadan, one of the world's three largest refineries, through a system of pipe

*(Continued on Page 46)*

# STATE CAPITALS...

## TEXAS

THE RAILROAD COMMISSION SPONSORED amendment which would grant the regulatory body more specific powers in allocating crude-oil production between fields has emerged from the house committee on oil, gas, and mining with a favorable report. Opposition has been voiced by several who assert that adoption of the amendment would promote selective buying and would destroy markets that companies have built over a period of years.

The amendment was introduced by Lester Clark, representative from Breckenridge, Tex., who is also chairman of the house committee on oil, gas, and mining.

Text of Mr. Clark's amendment follows:

"Whenever the total amount of oil which all the pools in the state can produce exceeds the amount reasonably required to meet the reasonable market demand for oil in this state, then the Railroad Commission of Texas shall limit the total amount of oil which may be produced in the state by fixing an allowable for the state which will not exceed the reasonable market demand for oil in this state.

"The Railroad Commission of Texas shall then allocate or distribute the allowable for the state among the pools on a reasonable basis and in such amounts and manner as to avoid undue discrimination and so that waste will be prevented.

"In allocating the allowable for the state, the Railroad Commission of Texas shall formulate rules setting forth standards or a program for the distribution of the allowable for the state and shall distribute the allowable for the state in accordance with such standards or program, where conditions in one pool or area are substantially similar to those in another pool or area, then the same standards or program shall be applied to such pools and areas so that as far as practicable a uniform program will be followed.

"The Railroad Commission of Texas shall not be required to determine the reasonable market demand applicable to any single pool except in relation to all pools producing oil of similar kind and quality, and in relation to the demand applicable to the state, and to the effect of limiting the production of pools in the state.

"In allocating allowables to pools, the Railroad Commission of Texas shall not be bound by nominations or desires of purchasers to purchase oil from particular fields or areas, and the Railroad Commission of Texas shall allocate the allowable for the state in such manner as will prevent undue discrimination against any pool or area in favor of another or others which would result from selective buying or nominating by purchasers of oil, as such term 'selective buying or nomination' is understood in the oil business."

## KANSAS

EXTENSION AGREEMENT of the interstate oil compact is now in the hands of Andrew F. Schoeppel, Topeka, Kans., chairman of the state oil-regulatory commission, who will present it May 24 or 26 to Gov. Payne Ratner for formal execution.

The agreement was executed by Gov. Leon C. Phillips of Oklahoma May 1. Governor Phillips, chairman of the Compact Commission, will send it to other compacting states when it is returned from Kansas.

When he executed the extension, Governor Phillips said:

"This waste-prevention treaty between the states was first executed in 1935 and has been twice extended for 2-year periods. Oklahoma was one of the first states to sign the original agreement and considers it an honor and a privilege to again renew its pledge of cooperation with the other states. From the five original states our membership has grown to nine. The membership of our commission now represents approximately 80 per cent of the total oil production of the United States and we will continue to enlarge that membership. We are grateful for the full cooperation of the member states and the oil industry in promoting state conservation of our petroleum resources."

## ILLINOIS

ASSESSMENT AND TAXATION of intangible property of foreign corporations in Illinois in the same manner as domestic corporations is provided in a bill now before the state legislature.

Sanctioned by Gov. Dwight H. Green as one of a series of tax bills, the measure would affect property of a large number of operating oil companies active in Illinois.

Opposition to the bill developed a short time after it was referred to the house revenue committee, and capitol observers predicted a strong protest will be registered by petroleum firms doing business in the state.

Meanwhile, a bill placing a 3 per cent production tax on Illinois oil—which passed the state senate 2 weeks ago—remained on second reading on the house calendar. State Finance Director George B. McKibbin said he had no objection to a proposed amendment requiring all companies collecting the tax to keep records of such transactions in the state. If adopted, the amendment is slated to force many companies to increase auditing and business staffs.

Partial compensation for collections is afforded, however, under terms of the bill. Companies will be permitted to set aside up to 2 per cent of the total amount of taxes collected as "administrative costs."

An offset-drilling bill was advanced to third position on the house calendar, ready for a final vote.

Governor Green and his administrative adviser, Gilbert Keebler, declined to comment on possibilities of introduction of an oil-conservation bill in the current session after Congressman Edward A. Kelly, Chicago Democrat, in a formal statement urged the executive to pass a control measure as soon as possible.

### ACTIVE IN OIL AFFAIRS . . .

*D. R. LAUCK, Wichita, Kans., independent operator, has taken an active part in legislative matters dealing with the oil industry since his election as president of the Kansas Independent Petroleum Association*

## CALIFORNIA

THE CALIFORNIA LEGISLATURE is considering a bill which would legalize and permit future tideland drilling from the uplands in Ventura and Santa Barbara counties and may take action on the measure in the near future. The oil-industries committee of the state assembly gave a favorable report and passed the bill out to the main body for consideration. Webb Shadle, representing the state Lands Commission, told the committee the proposed law which has the backing of the administration would be applicable in Ventura and Santa Barbara. There is little likelihood that any such application could be made in Los Angeles or Orange counties in southern California due to consistent opposition to such a move. The oil committee also voted out the Potter bill with a "do pass" recommendation. This bill would prohibit the sale of gasoline or other motor fuel at less than the price posted on the pumps. A similar measure failed a few years ago. This was the so-called substitution act and the fair-practice act.

## LOUISIANA

A STATE-WIDE HEARING will be held in the Monteleone Hotel, New Orleans, La., May 15, at 10 a.m., for the purpose of taking evidence relative to market demand from producers and purchasers of crude petroleum and natural gas preparatory to setting oil and gas well and field allowables for the 61-day period of June and July and for the adoption and issuance of necessary orders relating generally to the prevention of waste, and the equipping, drilling, completion, producing and abandonment of oil and gas wells in this state.

It is requested that all purchasers of crude petroleum and natural gas present evidence at such hearing, or file notarized briefs by registered mail setting out their nomination, in triplicate, for the 61-day period on or before May 15.

## IOWA

VETO POWER of Gov. George A. Wilson was used at Des Moines last week to nullify a legislative act calling for a $25,000 state-treasury bonus for the first operator to complete a commercial oil well in this state. The governor explained that his veto was based on failure of the act to obtain approval of two-thirds of the elected membership of the two houses, a constitutional requirement in appropriation bills.

## WISCONSIN

THE PUBLIC SERVICE COMMISSION will open hearings here May 20 at 10 a.m. on the applications of three natural-gas companies to do business in the state. Applicants are the Wisconsin Natural Gas Co., subsidiary of the Western Natural Gas Co.; the Independent Natural Gas Co. of Bartlesville, Okla., subsidiary of Phillips Petroleum Co., and the Kansas-Wisconsin Natural Gas Co., Chicago.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

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# Natural Gas in Step

The natural-gas industry occupies the strongest operating position in its history. It has more production, more proven reserves, and more customers than ever before. After expanding its outlets to new peaks in 1940, further gains are assured for this year. The industry is 40 per cent larger than it was in 1929 and twice as large as it was a decade and a half ago.

The A.G.A. sessions at Dallas this week reveal the reasons for this exceptional growth. The industry is manned by those who place the emphasis where it should be placed. Service to the consumer comes first. Technical accomplishments reflected in operating efficiency are fostered. Marketing policies are sound.

Furthermore, acting collectively and individually, the industry has had the vision to tell the public what it is doing. A.G.A.'s President Strickler stressed the accomplishments of this public-relations program in his talk to the Natural Gas Section, explaining: "As to objectives we want the public to know the truth. We want to be accepted for what we are—good, law-abiding, patriotic citizens engaged in a business that is not only necessary to the American standard of living but is vitally important in making American defense invincible."

The business of finding and producing gas from underground reserves and transporting and distributing an essential fuel is still young and has a long way to go if its progress is not impeded by outsiders.

The bulk of the gas is still consumed in areas adjacent to the fields where it is produced. Four states—Texas, California, Louisiana, and Oklahoma—produce about 80 per cent of the marketed output and consume more than 50 per cent of the total for the entire United States. A large part of this country either does not have natural gas or the supply is limited to a small fraction of the needs.

No one now disputes that consumers want natural gas for the several fuel uses when they can get it. Recently in areas served with natural gas, 90 per cent of 80,000 new homes installed natural gas for heating. Defense preparations have emphasized the fact that additional manufacturers and commercial users as well as home owners need this fuel.

The increased demands of the eastern part of the United States with many major markets still untapped, clearly show that the limited production in that section should be supplemented with new pipe-line movements from the mounting reserves of the Southwest. Greater supplies are also needed in the Middle West.

The several applications now on file with the Federal Power Commission seeking permits for the construction of new lines east and north from the gas fields of the southwestern states, if approved, would take care of a large part of the immediate requirements.

Delays in most cases are due to the action or lack of action of state and federal regulatory bodies. The needs of gas producers for additional outlets and the wants of additional millions of potential consumers do not prevail against the tomfoolery and worse of legislators and commissions.

Recently the F.P.C. struck a new note and now seeks authority to restrict the use of natural gas to functions. State bodies have had similar ideas. Competitive fuels are behind these proposals which have no precedent in governmental regulations in this country.

Chairman Hancock of the Natural Gas Section at the opening Dallas session Monday covered this threat and others equally undesirable when he said: "This industry deplores the exercise of regulatory powers in ways which are unreasonable and which are unjust and injurious to the industry, and in the long run, to the public which it serves."

# Paloma's Unit Plan Getting Nod From Landowners, Operators

By L. P. STOCKMAN

LOS ANGELES, Calif., May 5.—The unit plan of operation for the Paloma field of Kern County, California, where hydrocarbons are in the vapor-phase state, is being submitted to all operators and landowners for approval. Over 85 per cent have already expressd approval and only three interested parties failed to consent to the projected method of development until after further study of the proposal. Because application of this method of development will work to the advantage of both operators and landowners it is likely that no difficulty will be experienced.

Landowners who are not familiar with the oil industry are expected to consult experienced engineers and if this is done there will be no doubt over the outcome because the inherent advantages are obvious to those familiar with the operation of such plans. The Paloma field, which covers considerable acreage in the Buena Vista Lake region in the San Joaquin Valley, is California's first distillate field and consequently must be operated as such. Ohio Oil Co. and Western Gulf Oil Co., the only two operators that have developed commercial production in the field to date, regard the application of unit development as of paramount importance and in order to enhance approval of the plan and to prevent waste have shut in their respective wells pending the outcome of the present plan.

Because of the projected unitization, it is necessary to disregard property lines as far as possible in order to locate injection and withdrawal wells at most strategic points throughout the structure. Moreover, operators or the operating unit must install costly equipment for the recovery of the distillate and the reinjection of the gas produced as it is advisable to keep pressure in the reservoir as nearly equal to the initial pressure as possible. In addition to the necessity of adopting the plan from an economical standpoint and, because of operating conditions, operators will face application of the California gas-conservation law if they try to develop and produce any property and blow the gas to the air. The projected plan appears eminently fair and equitable to all concerned and will no doubt be approved unanimously when it is fully understood. A conservatively drawn irreducible line has been drawn around the probable edges of the structure and can be extended only by the actual completion of a commercial well.

**PALOMA FIELD REVISED UNIT-PLAN PARTICIPATION**
(Refers to limit line established March 28, 1941)

| | Acres | Per cent |
|---|---|---|
| General Petroleum Corp. | 224 | 3.80 |
| Superior Oil Co. | 360 | 6.10 |
| Hancock Oil Co. | 40 | .68 |
| Union Oil Co. | 400 | 6.78 |
| Lloyd Corp. | 80 | 1.36 |
| Chanslor-Canfield Midway Oil Co. | 80 | 1.36 |
| Barnsdall Oil Co. | 80 | 1.36 |
| Western Gulf Oil Co. | 1,331 | 22.56 |
| Texas Co. | 1,411 | 23.92 |
| Ohio Oil Co. | 1,612 | 27.33 |
| Signal Oil & Gas Co. | 80 | 1.36 |
| Standard Oil Co. | 200 | 3.39 |
| **Total** | 5,898 | 100.00 |

## PALOMA OPERATORS' AGREEMENT

THIS AGREEMENT, dated May 1, 1941, made by and between the corporations whose names are subscribed hereto, each of said corporations being a lessee, as hereinafter defined, of land in the Paloma field, Kern County, California.

WITNESSETH: That,

Whereas, It is in the public interest that developing and producing operations in the Paloma zone in the Paloma field be conducted pursuant to a unit plan so as to conserve natural resources and prevent avoidable waste thereof; and,

Whereas, In the said Paloma zone the maintenance of pressure and creation of gas drive accomplished by systematic cycling under a unit plan are essential to prevent permanent loss of contained hydrocarbons by condensation within the sands and to obtain maximum ultimate recovery of said hydrocarbons;

Now, Therefore, in consideration of the premises and of the covenants and conditions hereinafter contained, the parties hereto agree severally and among themselves as follows:

### ARTICLE 1
### Definitions

*Paloma field.*—For the purpose of this agreement, Sections 27 to 36, inclusive, Township 31s, Range 26e; Sections 1 to 6, inclusive, and 8 to 15, inclusive, Township 32s, Range 26e; and Sections 6, 7, and 18, Township 32s, Range 27e, M.D.B.&M., Kern County, California, are considered as constituting the Paloma field.

*Paloma zone.*—The subsurface strata encountered in the intervals shown below for all wells completed to date on lands included within the shaded area shown on the map marked Exhibit A annexed hereto, together with such sands in other strata underlying the Paloma field as have a pressure connection above the oil-water or gas-water contact with a sand occurring in such intervals, are herein referred to as Paloma zone.

| Well— | Location | Sand interval Top | Bottom |
|---|---|---|---|
| Ohio Oil, KCL A-9 | 4-32-26 | 9,990 | 10,340 |
| Ohio Oil, KCL B-3 | 3-32-26 | 9,940 | 10,288 |
| Ohio Oil, KCL B-2 | 3-32-26 | 10,001 | 10,361 |
| Western Gulf Oil, KCL A-54-3 | 3-32-26 | 10,008 | 10,178 |
| Western Gulf Oil, KCL A-74-3 | 3-32-26 | 10,070 | 10,420 |
| Western Gulf Oil, KCL A-34-2 | 2-32-26 | 10,300 | 10,722 |
| Western Gulf Oil, KCL B-12-12 | 12-32-26 | 10,250 | 10,752 |

The figures shown under heading "sand interval" represent depths in feet below the surface of ground.

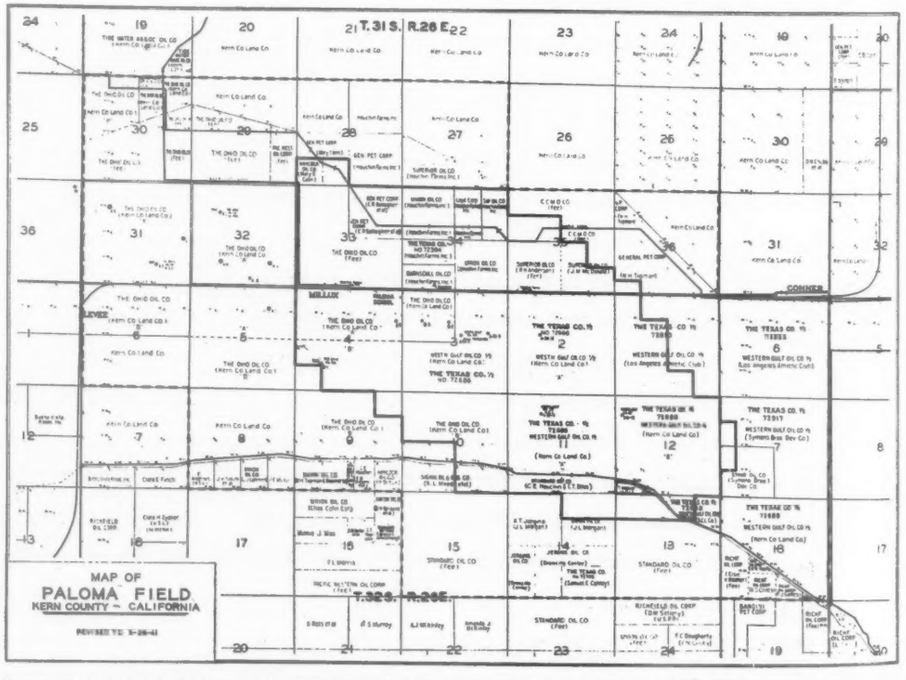
*Party.*—The terms "party," "party to this agreement," and "party hereto" shall include not only signatories hereto but also their respective successors and assigns.

*Lessee.*—The term "lessee" as used herein means the owner of the right to develop, operate, and produce oil, gas, and other hydrocarbons, whether as lessee or otherwise, and shall include the owner of lands not under lease. When used in connection with any land which has become subject to this agreement, such term shall refer to the signatory owning such right at the time when said land originally became subject hereto, and its successors and assigns other than by virtue of the execution of this agreement.

*Controlled lands.*—Lands in the Paloma field, of which a party or parties to this agreement are lessees and for which consent for inclusion in this agreement shall have been obtained from lessors and other necessary persons, are herein referred to as "controlled lands" until January 1, 1946; provided that the participating lands hereinafter referred to will be within the definition of controlled lands during the full term of this agreement.

*Participating lands.*—Controlled lands lying within the shaded area shown on Exhibit A, together with other controlled lands which may be added thereto from time to time, as herein referred to as "participating lands."

*Unitized substances.*—All oil, gas, and other hydrocarbons which may be produced from the Paloma zone

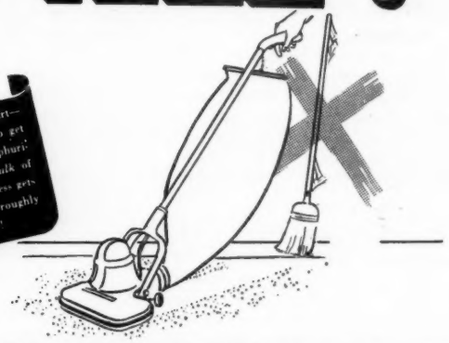



*Properties included in Paloma field unitization plan are shown within heavy black lines in the center of this plat (Referred to in the agreement as the "shaded area, Exhibit A")*

# GET IT ALL!

A broom will get some of the dirt—but it takes a vacuum cleaner to get it ALL. Similarly other de-sulphurization methods will get the bulk of the $H_2S$. But the Girbotol process gets it ALL. To do either job thoroughly you must use the right means!

*Girbotol gas purification plants are available in 6 different standard sizes, as well as in large individually engineered units like the one shown at the right.*



## The GIRBOTOL Gas Purification Process removes all the $H_2S$-and at far less cost!

Most gas purification processes will get the *bulk* of the $H_2S$—possibly down to 30 grains. That is easy to accomplish by most *any* method.

Why put up with such *incomplete, unsatisfactory* de-sulphurization, when the GIRBOTOL PROCESS positively and unfailingly removes $H_2S$ *100%—all of the* TRACES *as well as all of the bulk!*

Other outstanding advantages of a Girbotol Purification Plant are: (*1*) It costs *much less* to install. (2) It requires *no expensive materials* that must be constantly replenished. (3) It can be used on both *high pressure* or *high sulphur content* gas. (4) It offers *simultaneous* dehydration and purification.

Let us send you complete details *now* —without obligation.

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*The GIRBOTOL process is a simple, continuous process for the separation and recovery of acidic gases, such as $H_2S$ and $CO_2$, from mixtures. In cycle and equipment the process is similar to gasoline absorption. The process is protected by U. S. and foreign patents owned by The Girdler Corporation.*

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underlying the participating lands are herein referred to as "unitized substances."

*Productive well.*—A well which is capable of producing from the Paloma zone in any 24-hour period by natural flow at least 75 bbl. of crude oil or condensate in a field separator at or near the well head of at least 500,000 cu. ft. of natural gas (measured in accordance with approved procedure of the California Natural Gasoline Association) is herein referred to as a "productive well."

### ARTICLE 2

#### Unitization

All participating lands are hereby pooled as to the Paloma zone only, and all oil, gas, and other hydrocarbons that may be obtained from the Paloma zone underlying participating lands are hereby unitized. Nothing in this agreement shall be construed as affecting or in any manner relating to interests or rights in any formation or strata other than the Paloma zone.

### ARTICLE 3

#### Operators' Committee

A. All operations hereunder shall be carried on at the expense of the parties hereto through the agency of an operators' committee, hereinafter called "committee," consisting of one representative appointed by each of the following corporations which shall become a party hereto prior to July 1, 1941, to-wit: Barnsdall Oil Co., Chanslor-Canfield Midway Oil Co.; General Petroleum Corp. of California, Hancock Oil Co. of California, Lloyd Corp, Ltd., Ohio Oil Co., Signal Oil & Gas Co., Standard Oil Co. of California, Superior Oil Co., Texas Co., Union Oil Co. of California, and Western Gulf Oil Co., or the successors and assigns of any of said corporations. The committee may, however, enlarge its membership from time to time by admitting representatives of lessees of participating lands who shall become parties hereto after July 1, 1941, but no lessee shall be entitled to more than one representative. The ownership of the same land or lease by two or more persons or corporations at the time of the execution of this agreement shall not entitle them to more than one representative for their collective interests, but the foregoing shall not apply to the Western Gulf Oil Co. and the Texas Co., each of which shall be entitled to a representative. Any lessee of participating lands who has no representative on the committee may authorize any member thereof designated by it to represent it and to cast the vote to which it is entitled by reason of the acreage content of its participating lands.

B. If the interests of two or more of the above-named lessees shall hereafter become vested in one lessee, such lessee shall be entitled to name only one committee member. If the interest of any lessee is hereafter subdivided by assignment or otherwise, such interest shall continue to be represented by but one committee member.

C. Any party having a representative on said committee may at any time designate an alternate to serve in the absence of such representative. Any representative or alternate may be removed at any time by his principal, and the vacancy in such case shall be filled by a new appointee of the principal.

D. Any action or determination by the committee except when adding to participating lands under the provisions of Subdivision A of Article 15 hereof shall require the affirmative vote of not less than one-half of the members thereof; provided that such members so voting in the affirmative shall represent in excess of one-half of the total acreage of the participating lands; and such vote shall be binding on all parties hereto.

### ARTICLE 4

#### Agency

Each party hereby authorizes the committee to develop and operate its participating land for the recovery of unitized substances, such authorization to continue for the full term of this agreement, and agrees that it will not develop or operate such lands for the recovery of unitized substances except through the agency of the committee. Each party further authorizes the committee to drill upon or otherwise explore the Paloma zone underlying its nonparticipating controlled land, at any time before January 1, 1946. Nothing herein contained, however, shall restrict the right of any party to independently carry on drilling, exploratory, and producing operations in said zone on such nonparticipating controlled lands until such time as the same is included in participating lands.

### ARTICLE 5

#### Powers of Committee

A. *General.*—The committee, for and on behalf of the parties hereto, shall plan, coordinate, and manage or conduct the development and operation of the participating lands, and may drill upon and explore nonparticipating lands in the Paloma field as herein provided. It is hereby authorized to do any and all things necessary or convenient for carrying out the provisions of this agreement. Without limiting said powers, the committee is specifically authorized, for and on behalf of the parties hereto:

(1) to drill, cause to be drilled, or otherwise acquire wells;
(2) to construct, cause to be constructed or otherwise acquire structures, plants, and other facilities;
(3) to operate or cause to be operated wells, plants, and other facilities;
(4) to sell or otherwise dispose of, or authorize the sale or disposal of any structures, wells, plants, facilities, materials, or supplies;
(5) to enter into such agreements as it may deem advisable for carrying out the purposes of this agreement;
(6) to carry out and enforce agreements made hereunder and for such purpose to bring suit in the name of the parties hereto, and to appear and defend suits brought against the parties hereto, and to compromise or settle litigation;
(7) to determine the amount of money required for the purposes of this agreement, make calls on the parties for same, and make expenditures therefrom; and
(8) to allocate and deliver production to the respective parties.

B. *Contracts.*—To avoid the inconvenience of naming all the parties hereto in each agreement made hereunder, the committee is authorized to execute such agreements in the name of "Paloma Operators," by a person or persons designated by the committee; and agreements so executed shall have the same effect as if the name of each of the parties hereto had been subscribed thereto. The committee may also maintain bank accounts in said name.

C. *Organization.*—Said committee shall select a chairman from its own membership, adopt rules and regulations for the conduct and performance of its duties, not inconsistent with the terms of this agreement, and shall keep and preserve a record of its proceedings and determinations, which record shall be open to inspection by any party hereto.

### ARTICLE 6

#### Cycling Plant

The committee, for and on behalf of the parties hereto, shall diligently proceed to construct or cause to be constructed a modern high-pressure condensate recovery and cycling plant to process and cycle gas produced from wells on participating lands.

### ARTICLE 7

#### Apportionment of Benefits and Burdens

A. The interest of each party at any time in and under this agreement, and in the unitized substances and facilities acquired through the instrumentality of the committee, and the share of each party in the burdens of this agreement shall be in the ratio which the acreage of such party's portion of the participating lands at such time bears to the acreage of all participating lands. There is appended to this agreement a list, marked Exhibit B, describing the various parcels of land in the Paloma field and the portion thereof in the shaded area, and setting forth the names of the corporations claiming to be lessees thereof, and a reference to the leases, if any, on which such claims are based. For the purposes of this agreement, the acreage content of the several parcels as shown on said Exhibit B shall be conclusively deemed correct as to all controlled lands.

B. The unitized substances produced and saved shall belong to the parties hereto in the ratio aforesaid and shall be apportioned and divided by the committee among the parties hereto according to their several interests, and each party shall make its own arrangements to take delivery of its share thereof from the common field storage. The committee shall provide temporary storage for liquid products, but if the products which have been apportioned to any party shall remain in such storage for more than 10 days such party shall pay storage charges at a rate or rates to be determined by the committee. Wet gas shall be processed, and the liquid recovered therefrom apportioned and divided as provided above. The committee, however, may withhold and use any unitized substances for operations hereunder and may return gas to subsurface formations, but in so doing it shall take from the share of each party in the ratio of the interest of such party to the whole.

C. If at any time in the opinion of the committee title to any participating lands or to any operating or other rights therein or the right of any party to receive its allocated share hereunder shall be disputed or clouded by court action or otherwise, the committee may withhold delivery of the products from or allocated to such lands or of such share, and sell the same, and in such case shall impound such part of the proceeds of such sale as may be involved until the matter in dispute shall have been determined or the cloud removed.

### ARTICLE 8

#### Payment of Calls

Each party agrees that from time to time during the life of this agreement it will pay to the committee, within a time specified after call therefor by the committee which in no even shall be less than 15 days, its pro rata share of all moneys required for carrying out the provisions of this agreement.

### ARTICLE 9

#### Delinquencies

Whenever any party shall fail to pay when due any amount herein provided to be paid by it to the committee, the obligation shall bear interest at the rate of 7 per cent per annum from maturity and each of the other parties shall have a lien on the interest of the delinquent party in the participating lands for its proportionate share of said amount, which lien may be enforced by the committee for and in the name of such other parties. The committee may also enforce such obligation by suit or otherwise for and in the name of the other parties or it may withhold the delinquent party's share of unitized substances then on hand or thereafter produced and sell the same and apply the proceeds to the payment of such obligation.

### ARTICLE 10

#### Existing Wells

Without unnecessary delay after this agreement becomes effective, the committee shall call upon the parties for the payment ratably to it of a stated amount equal to the cost (determined by the committee in accordance with the provisions of Exhibit C annexed hereto) of the Ohio Oil Co. wells numbered A9, B3, and B2 and Western Gulf Oil Co. wells numbered 54-3, 74-3, 34-2, and 12-12, together with all equipment therefor. Upon receipt of the amount of the call, the committee shall pay to the owner of each of said wells and equipment the said value thereof. Thenceforth said wells and equipment shall be owned ratably by all of the parties hereto.

### ARTICLE 11

#### Rents and Royalties

Each party agrees to pay all rents on lands of which it is lessee (as herein defined) and all royalties, overriding royalties, and other amounts which may be or become payable by reason of production allocated to said lands, and to protect the other parties against all claims therefor.

### ARTICLE 12

#### Taxes

Taxes, assessments, and other governmental charges on the petroleum mineral rights applicable to the Paloma zone underlying participating lands, and any tax on or measured by production therefrom, and taxes on improvements and personal property under common ownership of the parties hereto shall be paid by the committee as a part of the operating expense. In the absence of evidence to the contrary, all taxes and assessments on mineral rights shall be deemed to be applicable to the Paloma zone. The several parties hereto may collect from their respective lessors and royalty owners, by deduction from royalties or otherwise, the share of said taxes for which such lessors or royalty owners are or may hereafter be liable under

*(Continued on Page 115)*

# Watching WASHINGTON

By HENRY D. RALPH

**Witness denies that 20 large operators dominate whole field of petroleum in this country . . . Seek expansion of governmental helium plant at Amarillo . . . May curb oil exports to Japan . . .**

WASHINGTON, D. C., May 5.—The thesis that 20 major oil companies control the petroleum business of the country was rejected here last week before the House appropriations committee by Dr. John W. Frey of the Petroleum Conservation Division of the Interior Department.

Testifying in support of the annual appropriation to maintain the division for the next fiscal year, Dr. Frey was questioned by Rep. Charles H. Leavy of Washington.

"There has been a report published in the papers recently that some 20 large operators dominated the whole field of petroleum in this country. Do you agree with that?" asked Mr. Leavy. The following interchange took place:

Dr. Frey: I know that that statement was made as a consequence of a report to the T.N.E.C. by a man named Cook in the Department of Justice. I would characterize that report as inaccurate, incomplete, and ex parte.

Mr. Leavy. You do not believe that there is any control that is substantial enough to affect the price structure by any group of companies in this country?

Dr. Frey: No; I do not; price structures are the result of the interplay of all the forces.

Mr. Leavy: Or by any number that are working in cooperation through some institute or association or agreement?

Dr. Frey: I would rather think that if I mentioned that, that I would assume that I were the judge.

Mr. Leavy: I know, but you are an expert in this field, and you are giving your time and efforts to a study of it, and you know it undoubtedly better than the rest of us.

Dr. Frey: My own opinion is, no group of companies by collusion dominate the entire price structure of the United States.

Later in his testimony, Dr. Frey was asked the same question by Rep. Harry R. Sheppard of California, and he replied, "That is a correct statement; in my judgment there is no concerted or collusive action to fix prices."

"Have you read the report of the Temporary National Economic Committee in which they definitely allege that 20 companies do control it?" Mr. Sheppard asked.

"Yes, sir," replied Dr. Frey, "and I am not in accord with it."

●

## Expansion of Helium Plant Asked in Money Bill

FUNDS for the construction of an additional unit for the production of helium at the government-owned plant at Amarillo, Tex., and for the drilling of three additional wells to increase the total capacity of the plant from 24,000,000 to 36,000,000 cu. ft. annually would be provided under terms of the Interior Department appropriation bill, now under consideration by Congress.

During hearings before the House Appropriations Committee on the measure, Dr. R. R. Sayers, director of the Bureau of Mines, explained that the proposed expansion had been "urgently requested" by Army, Navy and defense officials in order to meet estimated needs during the 1942 fiscal year, which are expected to be four times as great as actual demand in 1939.

The present capacity of the plant will just about cover demand for the current fiscal year, Dr. Sayers said, and it is estimated that during the coming year demand will reach approximately 26,000,000 cu. ft., or 2,000,000 cu. ft. in excess of capacity. For the fiscal year 1943, he said, it is expected that there will be a further expansion in utilization of helium and about 29,000,000 cu. ft. will be required to fill all needs.

The appropriation bill also carries funds for an investigation into commercial possibilities of helium deposits known to exist in Kansas, Colorado and Utah.

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## Support Given Rumors Of Japanese Oil Embargo

RECURRENT reports that the United States is about to take action to cut off exports of petroleum to Japan received circumstantial support in the publication of the hearings on the Interior Department appropriation bill.

Committee members, the hearings disclosed, asked Bureau of Mines officials many questions about exports of crude oil and refined products to Japan, and finally called in Brig. Gen. Russell L. Maxwell, administrator of export control, although appropriations for his office are not carried in this bill.

Figures submitted by General Maxwell showed that Japan is obtaining virtually no quantities of petroleum products subjected to export license control last July, but is taking large quantities of crude oil, motor gasoline and other refined products.

Committee members did not openly advocate further curtailment of exports to Japan, but their close questioning indicates a strong interest in the subject. There have been repeated rumors in recent weeks that this Government is contemplating an embargo on Japanese petroleum purchases as a means of collaborating with Great Britain and the Netherlands East Indies in curbing the southward expansion of the Japanese sphere of influence in the Pacific. According to some of the rumors, such an embargo would be the first step in a plan of action agreed upon by the three governments, since it is believed that Japanese naval-fuel reserves are limited.

When asked about this at his latest press conference, President Roosevelt said he knows nothing of the report and suggested that the State Department be asked. Secretary of State Cordell Hull told his press conference the same day that nothing new on this subject is under consideration. He added that if any action should be taken in the direction of what might be considered economic warfare, such as freezing the funds of belligerent nations or controlling exports of oil, the action would apply to all countries and not be directed against a single nation.

Observers noted, however, that both export control and the freezing of foreign funds are accomplished by a license system, and while ostensibly the system would apply equally to all countries, in practice licenses could be denied to Axis powers but granted to Great Britain. To a considerable extent the export license-control system is operating in this fashion, since England can obtain export licenses much more easily than can Japan.

General Maxwell told the committee that exports of aviation gasoline to Japan have been stopped, but that motor gasoline obtained by Japan could be used for operation of aircraft, though not on a basis which would be considered efficient in this country. He gave no indication as to whether or not he would favor subjecting additional petroleum products to license, saying that he receives his instructions directly from the president.

●

## Senate to Investigate Public-Land Handling

COMPLETE study and investigation with respect to the development of the mineral resources, including oil and gas, of the public lands of this country will be undertaken by a special Senate committee under the provisions of a resolution adopted by the Senate.

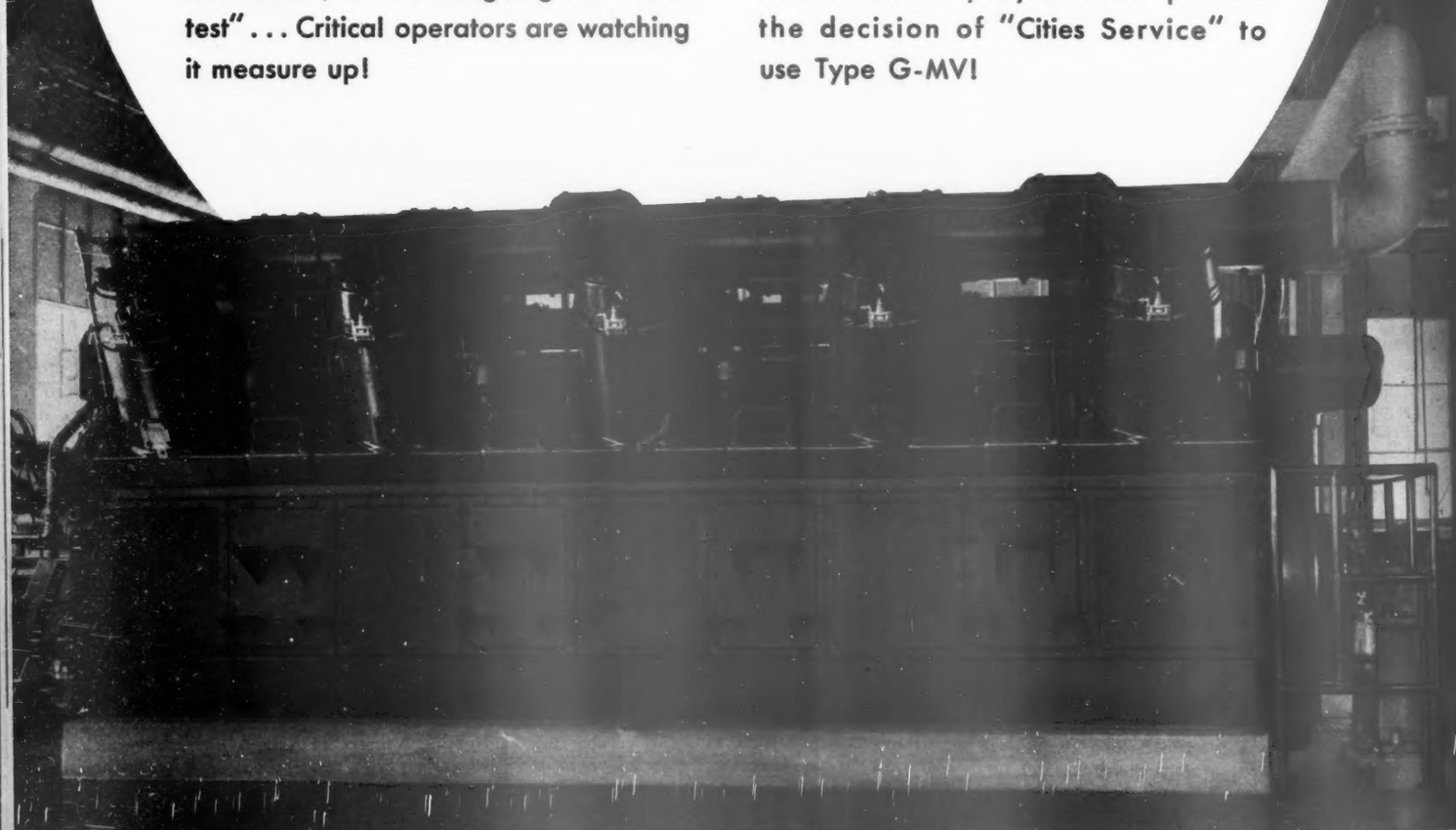
The measure calls for particular study of existing laws relating to the development of public lands with a view toward providing for more effective development and utilization of such resources for the purposes of national defense, fostering free competitive enterprise and the investment of private capital in the development of the mineral industry and the production of essential and useful minerals, and conserving such mineral resources to the fullest extent which is consistent with their proper development and utilization.

There has been a growing feeling among western senators and representatives that the vast deposits of oil, gas, and other mineral resources located on public lands are not being utilized to the extent which might be possible under better administration. It is felt that the Interior Department has adopted too strict an attitude with respect to the limitations placed on the granting of leases on oil and gas lands.

# IT'S TYPE G-MV FOR "CITIES SERVICE"!

**1,000 horsepower at 300 rpm! This ten-cylinder "V-angle" compressor unit is now at work in Cities Service Gas Company's station at Pampa, Texas. Working alongside Cooper-Bessemer horizontals, it is undergoing the "acid test"... Critical operators are watching it measure up!**

**Space-saving design, foundation-saving compactness, transportability, speed of installation, oil-cooled power pistons, Silent-Scot fuel injection, streamlined scavenging ... all these played their part in the decision of "Cities Service" to use Type G-MV!**



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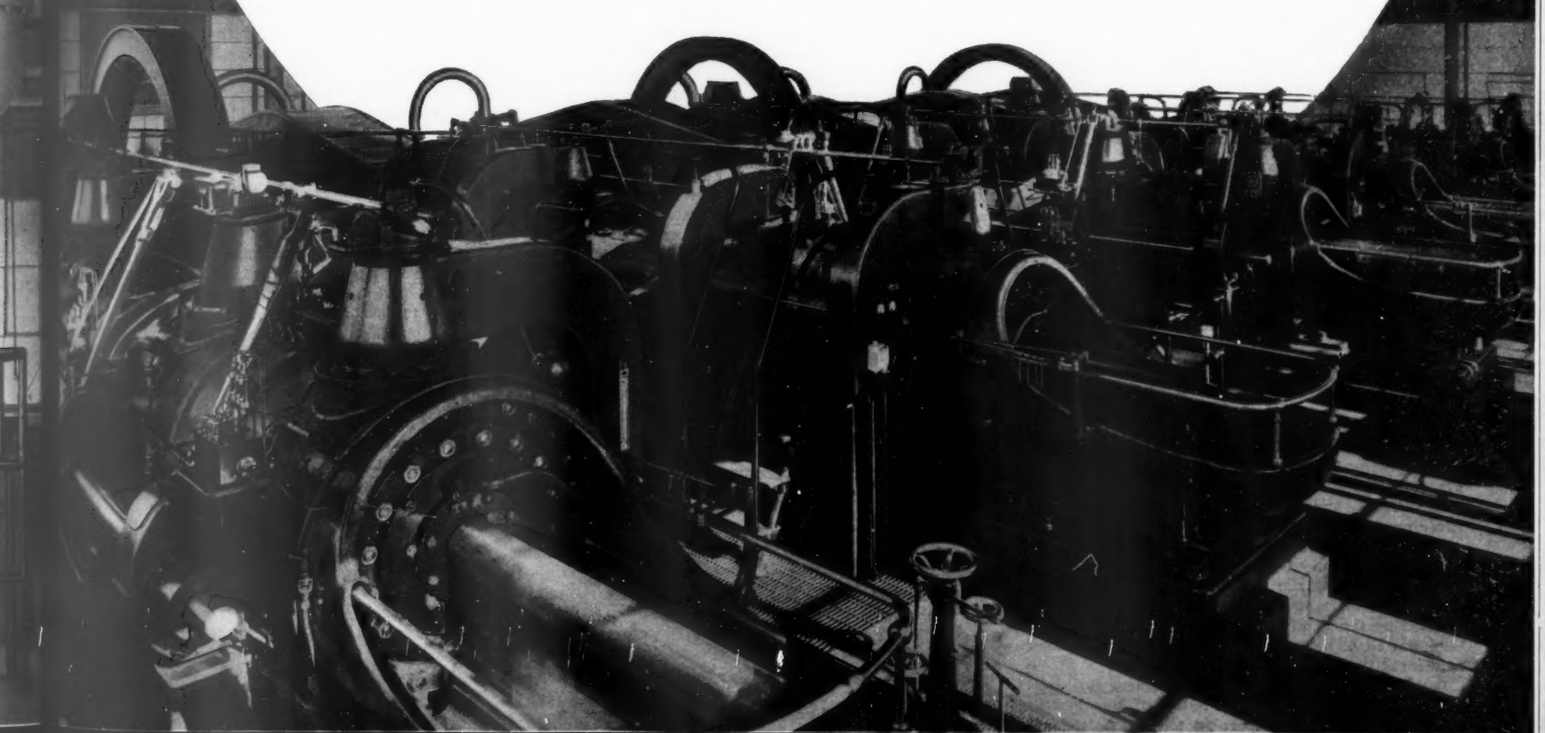
The long, trouble-free life of slow speed units, their welcome simplicity of operation and maintenance, and their rugged construction which assures absolute dependability . . . all these played their part in the decision of "Michigan Gas" to use Type 24's!



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# Cole to Sponsor Bill Unblocking Pipe Lines

WASHINGTON, D. C., May 5.—Legislation designed to remove the obstacles now preventing the construction of two southeastern gasoline pipe lines will be introduced in the House by Rep. William P. Cole, Jr., of Maryland, during the next week or 10 days.

This measure is the only petroleum legislation which is under consideration at the present time by the Cole petroleum subcommittee, proposals for federal regulation of the industry having been voted down by the committee after thorough investigation as entirely unnecessary in view of the excellent condition of the industry and its apparent ability to take care of all military and civilian needs in the event of any emergency.

The committee has recently completed an inspection trip of the southern oil-producing states and attended the annual meeting of the Interstate Oil Compact Commission at New Orleans, La. Following the committee's return to Washington, Mr. Cole secured permission from the House to delay filing a report until January 3, 1942. Previously the report had been due on May 1, 1941.

This action was taken, Mr. Cole explained, in order to hold the committee in readiness for action if rapidly changing world conditions might lead the president or defense officials to believe that additional legislation is necessary or desirable. However, he said, he can see "no urgent necessity" for regulatory legislation at the present time.

A bill extending the authority of the oil compact, which expires in September, will be reported by the committee later in the session, Mr. Cole said. However, he explained, this measure will be in the form of a straight 2-year extension with no provision for federal voting representation.

It had been expected that when the present compact expires an effort would be made to amend it to provide for federal representation in an effort to stave off more drastic participation by the Government in control of the industry. This proposal has been dropped for the next 2 years, Mr. Cole explained, as any amendment to the compact would require the ratification of the member states, and at least two of the states involved will have no meeting of their legislatures until 1943.

Federal authorization for the construction of the two pipe lines was made necessary by the refusal of the Georgia Legislature to enact legislation permitting the pipe-line companies to acquire rights-of-way for their lines under railroad tracks, Mr. Cole explained.

Despite urgent requests from President Roosevelt, defense officials, and the Secretaries of War, Navy, and the Interior, the railroads have refused the pipe lines permission to cross their rights-of-way, and the construction of the lines, needed to augment transportation facilities to the East Coast area, has been blocked.

The proposed lines would run from Port St. Joe, Fla., to a point on the Tennessee River near Chattanooga, Tenn., and from a point on the Mississippi River near Baton Rouge, La., to Greensboro, N. C.

The first of these lines, being constructed by the Southern Pipe Line Co., is virtually complete except for the portion to run through Georgia. The second, and more important of the two, which will be constructed by the Plantation Pipe Line Co., has not yet been started, it being held up pending the settlement of the right-of-way question.

Both lines have been urged by President Roosevelt and offcials of the Office of Production Management as vitally needed to transport oil for national-defense purposes.

## Inaugurate Plans for Safety Activities at Exposition

Plans for greater-than-ever safety activities and awards at Tulsa's 1942 International Petroleum Exposition got under way this week as Pres. W. G. Skelly announced the appointment of the central committee for safety activities at the May 16 to 23 show.

H. W. Boggess, director of safety for the Sinclair Prairie Oil Co., accepted reappointment as safety committee chairman, to work with the following members of the central committee: J. E. Dyer, Sun Oil Co., vice chairman, Elmo Murphey, Mid-Continent Petroleum Corp., program-committee chairman, R. S. Huffman, Oklahoma Natural Gas Co., contest-committee chairman; and Hadley H. Myers of Sinclair Prairie, chairman of the petroleum safety council.

Once more awards of gold watches and safety certificates will be made for safety records in the four major branches of the petroleum industry: production, refining, marketing, and pipe line and transportation.

*Members of Central Committee for Safety Activities at Tulsa's 1942 International Petroleum Exposition. Seated: H. W. Boggess, Sinclair Prairie Oil Co., chairman; R. S. Huffman, Oklahoma Natural Gas Co., and Hadley H. Myers, Sinclair Prairie Oil Co. Standing: J. E. Dyer, Sun Oil Co., and Elmo Murphey, Mid-Continent Petroleum Corp.*

# U. S. Oil Exports Increase 35% In March Over February

NEW YORK, May 6.—United States' crude-oil and refined-products exports took a large step toward recovery in March when they increased nearly 35 per cent from February to one of the largest monthly totals since the loss of the major European market. Combined crude-oil and refined-products exports in March totaled 7,144,376 bbl., an increase of 1,844,637 bbl. from the February total of 5,299,739 bbl. This increase leaves the total still well behind that of a year ago when aggregate oil exports were 11,239,148 bbl.

Both crude and refined exports rose sharply in March. Crude exports totaled 1,988,455 bbl. in contrast to 1,342,504 bbl. in February and 4,045,832 bbl. in March 1940. The increase from February was 645,951 bbl. Refined-oil exports aggregated 5,155,921 bbl. in March against 3,957,235 bbl. in February and 7,193,316 bbl. in March 1940. The increase from February was 1,198,686 bbl.

Japan was the United States' most important petroleum export customer in March, taking approximately 25 per cent of the total exports from this country. These exports, limited to crude oil and the major refined products, include those to United States territories and represent all exports from the continental United States including reexports.

The increase in crude-oil shipments abroad was accounted for principally by Japan, up 240,000 bbl.; though Canada, up 200,000 bbl., and Brazil, which took 186,000 bbl. in March against none in February, were also large contributing factors in the March increase.

Exports of all gasoline, including aviation, natural, and benzol, increased 679,897 bbl. to 2,044,772 bbl. Japan accounted for the bulk of this gain with its increase of 280,000 bbl. The Netherlands West Indies took a large amount of gasoline, their March total of 120,620 bbl. contrasting with 35 bbl. in February. Brazil increased its receipts of United States motor fuel 88,000 bbl. Aviation gasoline, including antiknock compounds, rose 140,000 bbl., with the Netherlands West Indies, up more than 100,000 bbl., and Japan, up 45,000 bbl., accounting for the gain.

Kerosene exports more than doubled, rising 82,642 bbl., as the Netherlands West Indies increased their total 74,500 bbl. Gas-oil and distillate shipments to foreign countries and territories rose almost one-third with the principal increases going to territories, 75,000 bbl.; U.S.S.R., 70,000 bbl.; China and Japan, each, 35,000 bbl. Total gas-oil and distillate shipments were up 245,987 bbl. Residual-fuel-oil exports rose 231,692 bbl., also a gain of close to 25 per cent, as United States territories increased their receipts from the continental United States 100,000 bbl.

Lubricating oil, alone of the major products, showed a decline in March. The March total of 702,685 bbl. was 41,532 bbl. under the February total. The United Kingdom increased purchases here 66,000 bbl. but Japan's total dropped 100,000 bbl. and the U.S.S.R., almost 60,000 bbl.

**CRUDE AND REFINED-OIL EXPORTS BY MAJOR COUNTRIES OF DESTINATION**

(Figures in barrels)

| | Crude | Aviation gasoline | All gasoline | Kerosene | Gas oil, distillate | Residual fuel oil | Lube oils |
|---|---|---|---|---|---|---|---|
| U.S.S.R. | ..... | ..... | ..... | ..... | 78,870 | ..... | ..... |
| Spain | ..... | ..... | ..... | ..... | 47,675 | ..... | 12,670 |
| United Kingdom | ..... | 29 | 130,207 | ..... | 19,604 | ..... | 196,885 |
| Canada | 764,422 | 9,457 | 28,581 | 1,699 | 30,854 | 79,777 | 40,281 |
| Cuba | 186,836 | 2,869 | 7,937 | 48 | ..... | 64,488 | 3,810 |
| Netherlands West Indies | ..... | 107,612 | 120,620 | 74,481 | ..... | ..... | 1,012 |
| Argentina | 98,955 | ..... | 227 | ..... | ..... | ..... | 1,057 |
| Brazil | 44,804 | 15,198 | 89,177 | 12 | 17,433 | ..... | 35,628 |
| China‡ | 59,419 | 25,193 | 74,003 | 6 | 48,889 | ..... | 19,116 |
| Japan | 825,031 | 103,372 | 406,578 | ..... | 244,623 | 82,325 | 84,207 |
| Australia | ..... | ..... | 610 | 146 | 8,727 | ..... | 44,334 |
| Territories | ..... | 52,913 | 462,712 | 42,819 | 176,502 | 331,997 | 24,997 |
| All countries: | | | | | | | |
| March 1941 | 1,988,455 | 497,049 | *2,044,772 | 164,630 | †1,037,274 | ‡1,206,560 | 702,685 |
| February 1941 | 1,342,504 | 355,080 | 1,364,875 | 81,988 | 791,287 | 974,868 | 744,217 |
| March 1940 | 4,045,832 | 316,725 | 2,265,013 | 484,997 | 2,318,369 | 932,087 | 1,192,850 |

*Includes 306,024 bbl. reexports; †includes 8,802 bbl. reexports; ‡includes 36,293 bbl. reexports. §Includes Hong Kong and Kwantung.

# Separation of Oil Industry Would Sap Defense Strength

WASHINGTON, D. C., May 5.—Attempts to break up the major integrated oil companies into nonaffiliated corporations, each performing a single operation, are likely to interfere drastically with the national-defense program and in addition work a hardship on the consuming public. Paul G. Blazer, president of the Ashland Oil & Refining Co., Ashland, Ky., sounded the warning at a conference on national resources and defense held in conjunction with the annual meeting of the United States Chamber of Commerce.

Mr. Blazer, stating that legislation is again before Congress proposing to segregate the operations of the industry into its different branches, explained that enactment of such a proposal would prohibit a company engaged in refining from owning or operating a pipe line, a tanker, a tank truck or a service station.

"In addition to this proposed legislation," he declared, "civil suits filed against the large integrated oil companies by the Antitrust Division of the Department of Justice appear to have a similar objective."

Comparing the operations of the oil industry to the assembly line of an automobile plant, Mr. Blazer stated that the close coordination necessary to obtain "this uninterrupted flow of volatile, hazardous product has been attained through vertical integration of operations extending all the way from the finding of new oil fields to the delivery of the refined products to every crossroads in the country."

"The present effort to break up the large oil companies into smaller nonaffiliated corporations, each performing a different function," he declared, "is contrary to the interests of the consuming public, and conceivably might cause such disruption of long-established methods of operation as to interfere disastrously with our national-defense program. Aside from all other considerations, such a novel experiment, involving drastic changes in management in a vital defense industry, constitutes an unnecessary risk."

Dr. Robert E. Wilson, president of the Pan American Petroleum & Transport Co., and oil consultant to the Office of Production Management, stressed the ability of the petroleum industry to meet all possible needs arising from the present international emergency with little or no resultant disturbance of civilian supplies of petroleum products.

While it is hardly possible to overemphasize the importance of petroleum in a modern mechanized war, Dr. Wilson said, any such emphasis should be coupled with a factual picture of the industry's ability to meet the needs of the country in order to successfully combat any "tendency to stimulate unwarranted fears of shortage and unnecessary proposals for additional control or regulation of the industry."

With respect to production, Dr. Wilson warned that normal activities looking toward the making of new discoveries must be maintained and unnecessary drilling and unsound well-spacing avoided.

"I am sure that if our producers are given freedom of opportunity, subject to the limitations of sound proration regulations, they will see that every possible demand is met for many years to come," he said.

The most serious possible bottleneck in the industry, Dr. Wilson stated, is a shortage of tanker transportation facilities to the East Coast. We do not have adequate tanker tonnage to take care of any sharp increase of demand in this area and this might result in a curtailment of civilian supplies should such an increase occur, he said.

"I am sure the business community will be gratified to learn that an industry which is so important to national defense and which is such an outstanding example of what free enterprise can do," he continued, "is able to meet the prospective emergency demands with so little difficulty.

"Serious attention must be given to augmenting transportation methods to the East Coast, but outside of this there seem to be no real bottlenecks in sight.

"This places both this country and England in an extremely fortunate situation in comparison with the Axis Powers, which have access to such a small percentage of world production."

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# The Annual Statements Say...

## Socony-Vacuum Oil Co., Inc.

A RESERVE for contingencies amounting to $75,000,000 has been created for the purpose of providing for possible losses which may or may not be realized in the company's foreign position. Of this reserve, $16,000,000 is definitely assigned to the investment in and advances to Colombian Petroleum Co. and South American Gulf Oil Co. operating in Columbia. A revised estimate of proven recoverable crude reserves in the Barco concession indicates the possibility of this loss, if no other commercially productive structures are developed there. Drilling during the next 2 years will probably be required to test such structures. The total investments in and advances to these companies amounted to $26,201,414.62.

Gross additions to the company's property account in the United States in 1940 were $50,359,295. Half of this was for crude-oil production. The marketing department required about 20 per cent of the capital additions. Refinery construction continues as required by needs for volume or economies of product quality improvements. There were substantial additions to crude and products pipe lines during the year. The company has on order eight deep-sea tankers. Two are scheduled for launching in 1941, four in 1942 and two in 1943. During the year Standard-Vacuum Oil Co. placed orders in American yards for six tankers to be used in foreign service, all scheduled for launching in 1941.

Under existing war conditions, it was impossible to present normal comparative figures or reports for foreign operations. From some countries in which the company operates there was no information received, and from other areas the reports are insufficient. In general, it can be said, the report declared, that the operations of Standard-Vacuum in the Far East continued at a volume about equal to 1939.

In South America, the operations of the Colombian Petroleum Co. producing crude oil were disappointing and caused writeoffs. In Venezuela, two potentially producing wells were completed about 70 miles from possible harbor loading point, and work is continuing to endeavor to prove sufficient acreage to justify a pipe line and terminal. This referred to the Socororo operations in the southwestern part of the State of Anzoategui and southwest of Oficina.

The company has assigned several specially trained men to assist defense officials in Washington.

## Standard Oil Co. of California

PROGRAM for increased production of high-octane gasolines essential to aviation is proceeding. The research work of adapting the Houdry process to the treatment of California crude oils has been successfully completed by the company and a plant, to cost $4,500,000, for the use of this process is now under construction at the company's El Segundo refinery. Considerable verbage was devoted in the statement to a review of the whole industry's capabilities to serve the national-defense requirements for petroleum.

The company fared well, the report states, in its search for oil, notably in Louisiana and Canada where discoveries indicate that fields of considerable importance have been found. The Canadian discovery is in southeastern Alberta Province. Louisiana discoveries include Barataria, Jefferson Parish and Stella on the Mississippi River.

Another part of the manufacturing expansion program will increase by approximately 30 per cent the capacity to produce solvent-refined lubricating oils.

## Amerada Corp.

EXPENDITURES for wells, including intangible costs, equipment and acreage was approximately $6,050,000, which compares with $5,350,000 in 1939. The company is prosecuting an active drilling program in the Fargo field, Wilbarger County, North Texas. Six wells were completed between the discovery date in July and the end of the year. During the first 3 months of this year six additional completions were registered. The 40 to 50 proven locations on Amerada acreage in the Seminole field, Gaines County, West Texas, probably will be drilled up this year.

Amerada advanced $75,000 to Esperanza Petroleum Corp., an interest-controlled affiliate, for payment of taxes and expenses necessary to maintain leaseholds in Venezuela. No wells have been drilled on Esperanza acreage and no drilling is contemplated at this time.

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## R. Elmo Thompson Named President, Superior Oil Corp.

R. Elmo Thompson, who since March 1939 has been executive vice president of Sunray Oil Corp., Tulsa, has resigned and has been named president of Superior Oil Corp., also of Tulsa. He succeeds John L. Essley,

*R. ELMO THOMPSON*

who has been named chairman of the board of directors. This move took place at the annual meeting of the stockholders of Superior Oil Corp. on Monday. Mr. Essley was also named vice president, and will take a long-delayed vacation.

Mr. Thompson stated that he "was leaving Sunray Oil Corp. and Sunray Oil Co. with reluctance because my 2 years with those companies have been both pleasant and informative. I have accepted the presidency of Superior Oil Corp. with a sincere appreciation of the confidence its directors have expressed in me by their invitation to become associated with that company."

Stockholders and directors were loud in their praise of Mr. Essley for his part in guiding the company through a trying period, and for his efforts in giving it a thorough reorganization.

Other Superior officers are F. A. Bodovitz, vice president and general counsel; N. C. Cross, secretary and treasurer, and S. Price Gray, assistant secretary and treasurer.

*W. F. Clinger, Clinger Oil & Gas Co., Warren, Pa.; J. E. Moorhead, executive secretary of the Pennsylvania Grade Crude Oil Association, Oil City, Pa.; Parker L. Melvin, president of the Pennsylvania Grade Crude Oil Association, Bradford, Pa.*

# Progress of Research Reviewed at Penn State

By A. C. MacINTYRE

STATE COLLEGE, Pa., May 5.—Papers ranging from production to plastics, touching on many phases of research in oil and gas, were presented at the tenth annual 2-day Pennsylvania Mineral Industries Conference here on May 2 and 3. The first session was devoted to oil and the second to gas.

The gathering was jointly sponsored by the school of mineral industries of Pennsylvania State College, the Pennsylvania Grade Crude Oil Association, the Bradford District Pennsylvania Oil Producers Association and the Pennsylvania Natural Gas Men's Association. It was arranged by Dr. S. J. Pirson, head of the department of petroleum and natural-gas engineering of the school.

Development of graphs and the building of instruments not readily available on the market for tests in moisture problems in gas, were described by C. E. Williams, head of the research department of the United Natural Gas Co., Oil City, Pa., in his paper, "A Discussion of Problems Due to Moisture in Natural Gas From the Producing Sand to the Consumer."

One graph, which proved of considerable value in the study, showed the total gallons of water which 1,000,000 cu. ft. of saturated natural gas can contain at various temperatures and gage pressures. The instruments were arranged to obtain satisfactory determinations of hydrate characteristics and the dew points of the gas.

The speaker considered moisture problems in a gas well, at the well head, in gathering and transmission lines and in regulators. He spoke of methods of controlling moistures and reached these conclusions:

"Problems due to moisture in natural gas are mostly the result of freezing or hydrate formation. Maintaining an unsaturated gas throughout its course will eliminate difficulties since no fluids can condense from an unsaturated gas and since hydrates will not form in the absence of water."

No evidence of corrosion and no water treatment problems have been experienced in a water-flood operation in West Virginia in which water that is connate to the Salt sand is being injected into the underlying Berea sand, Dr. E. T. Heck, geologist of the West Virginia Geological Survey, Morgantown, W. Va., told the gathering. The title of his paper was "Some Theoretical Aspects of the Use of Connate Water in Flooding Operations."

The operation is a closed system and each intake well has been receiving 100 bbl. of salt water per day for 18 months.

Fresh water, he pointed out, has several undesirable effects on the average oil sand and oil-field equipment. Although it is known that the use of natural salt (connate) water would eliminate some of these undesirable effects, objections to its use have been raised.

Dr. S. T. Yuster, in charge of the water-flooding research at Penn State, said that there was no appreciable difference in recovery through use of fresh water and connate water in some tests he had made.

Dr. R. L. Wakeman, industrial fellow of the Pittsburgh Equitable Meter Co. at the Mellon Institute, at Pittsburgh, traced the growth of American chemical industries based on oil and natural gas over the past two decades.

An estimated 3,600 million pounds of organic chemicals were produced from petroleum and other raw materials not of coal-tar origin last year, while only 1,600 million pounds of chemicals, including dyes, were made from coal tar.

The paper was confined chiefly to a survey of the chemicals produced from paraffinic hydrocarbons and their olefinic derivatives. The speaker outlined the five principal ways by which the paraffinic constituents of oil and natural-gas are converted into chemicals and listed some of the many plastics being made from those chemicals. The methods included chemicals from cracked gases, oxidation of paraffins, chlorination of paraffins and nitration and sulfonation of the paraffins.

Various experiments conducted at Penn State with cores, many of them from the Venango field, which afford an insight into the mechanism of the flow of fluids in porous media, were outlined by Dr. H. M. Krutter, in his paper on "Air-Drive Experiments."

Dr. Krutter said his experiments contradicted the belief intimated in current literature that the relative permeability as a function of saturation is a fundamental property of all cores. The tests showed, he said, that different cores have different relations and that this relation is not tied up with the specific permeability of the core. In other words, the relative permeability-saturation relationship is an individual characteristic and two cores of equal permeability may have different relative permeability-versus-saturation relationships.

Dr. R. W. Miller, research director of the Peoples Natural Gas Co., of Pittsburgh, in his paper on "Liquefaction and Storage of Natural Gas," told of the plans and research work which preceded the erection of the plant of the East Ohio Gas Co. of Cleveland, Ohio, to liquefy and store natural gas.

The liquefaction plan, he said, is not the complete answer to the gas-storage problem, which was brought about through increased demand rather than a shortage of gas. In sections where underground storage is available near the point of great demand, that method might prove best. He listed the two other methods in use—storage in pipe lines and the use of high pressure. The East Ohio Gas Co., he said, decided on the liquefaction method when it was estimated to be less costly than the building of an additional pipe line from the West Virginia-Ohio line to Cleveland.

The Cleveland plant met with demand in that city in the first 3 months of this year, Dr. Miller said, but declared that some minor changes may be made in the system.

W. F. Clinger, of the Clinger Oil & Gas Co., Warren, Pa., served as chairman of the oil session and George E. Welker, president of the United Natural Gas Co., Oil City, presided at the gas session.

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## Make Final Drive for Legislation on Oklahoma City Repressuring Project

A final drive to clear the way through state legislation for a repressuring project in the Oklahoma City pool was under way this week. Spokesmen for the Oklahoma City Wilcox Secondary Recovery Committee were noncommittal about their chances of having their proposed bill passed before the state legislature adjourns, but hearings before the senate oil and gas committee were started last week almost immediately after the bill was introduced.

Since the first draft of the proposed bill was printed and distributed in March (The Oil and Gas Journal, March 6), it has been revised five times. Most of the changes, however, were confined to details and legal technicalities. Fundamentally the bill introduced in the senate contained the same provisions to empower the state Corporation Commission to unitize the pool and authorize an operating authority to be set up for the purpose of repressuring.

Opponents of the plan gave their arguments before the senate committee last week and were answered early this week by Robert M. Williams, attorney for the secondary-recovery committee, and Arthur D. Small, the committee's engineer. Both Mr. Williams and Mr. Small believed the chances of getting the legislation through the present session of the legislature had been made slimmer by the lack of general knowledge of the proposal and by the lateness of the hour. Should the measure fail to pass, Mr. Williams said, plans will be made to reintroduce it the next time the legislature meets.

## British May Resume Oil Trade With Mexico

Diversion of Mexico's exportable petroleum to British consumers is a possibility reported this week in dispatches from London. The reports said that officials of the two governments are discussing the petroleum question at both London and Mexico City.

Details reported from London are that the Mexican Government is to function as the purchaser from the small producers in that country that escaped expropriation in March 1938 and turn over this oil, along with excess supplies under management of Petroleos Mexicanos, to the British for transportation to points of consumption.

London reports said 90 British tankers would call for the oil. Speculation over the reports was that the first service to which the 50 requisitioned United States tankers will be assigned is that of moving Mexican oil to Halifax or another North Atlantic port.

Mexican Eagle Oil Co. (El Aguila), subsidiary of the Shell group, was the largest producer and operator in Mexico to fall under the expropriation decree. The British and Mexican governments severed diplomatic relations when settlement efforts failed. Since that time in 1938 there has been little, if any, Mexican oil moved to England. Before war broke out many cargoes cleared Mexican ports with Lands End, England, shown in manifest papers. Actually, most of the oil so declared was diverted by amended orders to Germany and Belgium.

# *Shell Elevates Three In Personnel Changes*

SHELL UNION OIL CORP. has announced the appointment of R. B. High as special Washington representative for itself and affiliated companies. Mr. High is an old timer in the petroleum industry as he is now going into his twenty-seventh year of service with Shell. A graduate engineer of the University of California, he supervised the construction of the majority of Shell's great refineries in the United States and has been operating manager of three of them.

For the past 2 years he has been vice president of Shell Pipe Line Corp. His expert knowledge of all phases of the petroleum industry will help facilitate the business activities of the Shell companies with the various government agencies in Washington. His headquarters will be at 414 Washington Building, where

*H. H. ANDERSON*

*R. B. HIGH*

Shell has maintained offices for the past several months under the temporary supervision of C. B. Singleton, of its New York office.

Succeeding Mr. High as vice president of Shell Pipe Line Corp. is H. H. Anderson whose record with the Shell companies is well known in the petroleum industry. Mr. Anderson started with Shell in 1917 as a field worker in the Coalinga field of California, and in 1925 advanced to chief engineer of the production department on the Pacific Coast.

For several years he participated in a broad range of company organization work which brought him intimately into contact with all phases of Shell activity both in the United States and Mexico. He was made vice president in 1933 and since that time has had complete charge of all personnel activities in the territory east of the Rockies.

Mr. Anderson will make his home in Houston where the headquarters of Shell Pipe Line Corp. are located.

John H. Sembower, former service station attendant, lawyer and assistant personnel manager, became coordinator of all public relations activities for Shell Oil Co., Inc., east of the Rockies, effective May 1.

Mr. Sembower, at 32, is one of the youngest public relations men in the major industry, as well as one of the youngest executives in the Shell organization.

His broad experience with the public, retailers and company personnel, makes him well qualified to handle his new duties. These will include the coordination of company policies on employe and trade relations, national defense cooperation, and consumer buying.

He was born in Uniontown, Pa., of Pennsylvania Dutch parentage. He played football at Wilkinsburg, Pa., high school, and was also active in the debating and dramatic societies. He decided at an early age to become a lawyer, studying at Washington and Jefferson College and at the law school of the University of North Carolina.

During his summer vacations, he worked as a service-station attendant and at door-to-door selling, to gain experience meeting the public and also to help pay his schooling expenses.

He opened a law office in Charlotte, N. C., during the depression years, and secured special assignments with the North Carolina Petroleum Committee under the N.R.A., later being appointed secretary of the committee. This led to his acceptance of a selling position with Shell's southern division, as manager of the Greensboro, N. C., area.

His legal training led to his transfer to the personnel department in Shell's New York head offices, to work on the application of the Social Security Act, at the time of its enactment. He was made assistant manager of the department a year later.

Mr. Sembower is married, has two daughters, and lives in Douglaston, Long Island.

He succeeds Jamie T. Irvine, formerly advertising manager of the company's midwestern territory, who resigned recently as coordinator of public relations to accept an executive position with the d'Arcy Advertising Agency. Mr. Irvine is now located in Cleveland, Ohio.

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## Oil Producers in Nowata Area Testify in Washington On Flood Control

A committee from the Oklahoma Stripper Well Association testified this week in opposition to the construction of a flood-control dam on the Verdigris River, near Oologah, Okla. This committee represented operators who have been opposing this $8,500,000 project which threatens to interfere seriously with oil production in the Nowata field. The committee consists of W. A. Goforth, president of the association; Howard J. Whitehill, chairman of the committee; Herb McSpadden, J. B. Milam, and David G. Powell, executive vice president of the association.

In presenting testimony to the flood-control committee of House of Representatives, it was suggested that in place of the Oologah Dam, the Army should consider building dams in southeastern Kansas near Toronto, Neodesha, and Elk City. Dams at these points would make it less necessary to build one at Oologah having a spillway 650 ft. above sea level. Attention was directed to the fact that since 1922 flood waters had risen above the 650-ft. mark on 13 occasions. In a statement submitted by Leon C. Phillips, governor of Oklahoma, he said that he is vitally interested in conserving natural resources and seeing that they are produced in an orderly manner and he asked that construction of the Oologah Dam be deferred for at least 20 years or that dams be built on the upper reaches of the river. Reford Bond, chairman, Corporation Commission of Oklahoma, in a prepared statement presented in the testimony, said: "The Nowata-Rogers oil pool in northeastern Oklahoma is the best example of what can be accomplished by modern production methods. This oil field is the laboratory for the entire Mid-Continent area."

## Tanker Charters Approved

WASHINGTON, D. C.—During the week ended April 26, the Maritime Commission approved the following charters to aliens of vessels documented under the laws of the United States:

Tanker Castana by Commercial Molasses Corp. to Anglo-Saxon Petroleum Co., Ltd., from Aruba or Curacao, Netherlands West Indies, to Rio de Janeiro, Brazil.

Tanker Swiftlight on behalf of Oldwood, Inc., to Anglo-Saxon Petroleum Co., Ltd., for one voyage from a United States Gulf port or ports, or Netherlands West Indies, to a United States Atlantic port.

Tanker Pueblo by Standard Oil Co. of New Jersey to West India Oil Co., S.A., Panama, from Aruba to Corinto.

Tankers W. S. Farish and F. Q. Barstow by Standard of New Jersey to Imperial Oil Shipping Co., Ltd., for one voyage with a cargo of crude oil from Cartagena to Montreal.

## DEATHS

**CARL FOLEY,** 63, who for 32 years prior to his retirement from business 12 years ago was connected with the Oil Well Supply Co., died at his home in Wichita, Kans., May 2. He had been ill 2 years. Since his retirement, Mr. Foley spent 2 years in the employ of the state, as an inspector of oil wells. His widow and a daughter survive.

**EDWARD WILLIAM JORDAN,** 52, oil-field worker of Limestone, N. Y., died last week at a Bradford, Pa., hospital. He had been employed by the F. D. Wood Oil Co. for 21 years, until 1928. In that year he went to work for the Denwood Oil Co. He leaves his wife and a daughter.

**DAVID B. CRAWFORD,** 68, retired president and cofounder of Parkersburg Rig & Reel Co., Parkersburg, W. Va., died at his home in Parkersburg, May 3, after a long illness. His brother, John M. Crawford, is chairman of the board of the Parkersburg company.

**ELI HOWELL,** 62, vice president and director of the Prairie Lea Production Co., died May 3, a few days following a heart attack suffered while motoring near San Antonio, Tex. His wife, three daughters and a son survive.

**CHARLES B. NOLTE,** 55, president of the Crane Co., died suddenly last week of a heart attack at his home in Chicago. He had been suffering from heart disease and high blood pressure for some time, but had continued his normal business activity. His widow and two children survive.

**THOMAS WALTER JAMISON,** 58, Pampa, Tex., oil operator for the past 15 years, died in an Amarillo, Tex., hospital following an illness of 2 weeks. Mr. Jamison, a native Kansan, moved to Pampa in 1926 with the beginning of the oil boom. His wife, two sons and a daughter are among the survivors.

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## THE MARKETS*

CRUDE OIL: The strenuous competition for crude connections in the middle western producing states was again translated last week into higher prices. Michigan purchasers advanced crude postings 10 cents per barrel May 1 and Kentucky producers received an increase of 5 cents. South Penn Oil Co. advanced Corning grade crude 7 cents on May 2. Rumors persist that another general advance in crude may be forthcoming. This speculation is based on the expressed desire of most refiners to obtain more crude.

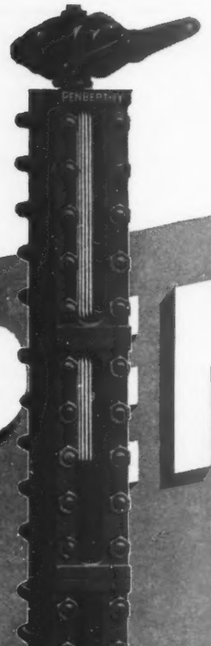
REFINED MARKETS: Gasoline markets in all parts of the country east of the Rocky Mountains are in firm position. Prospects are that higher prices may develop on the eastern seaboard as a result of diversion of 50 domestic tankers to management of the United States Maritime Commission. Mid-Continent lubricating-oil prices were advanced 0.5 to 1 cent per gallon May 1. Gulf Coast markets are on an uncertain plane for the moment as both buyers and sellers show concern over the effect of reduced tanker tonnage on product prices.

TANK WAGON and POSTED DEALER: Details of price advances ranging from 0.4 to 1.5 cents per gallon in the Middle Atlantic states reported this week completes the April increases made in all parts of the country. Standard Oil Co. (Indiana), on May 1 advanced to within 1 cent of normal all subnormal tank-wagon prices to both consumers and dealers on all three grades of motor fuel throughout Illinois and Indiana, except in the Chicago metropolitan area.

FINANCIAL: Oil securities closed last week more than a point higher. Average of 30 representative stocks for week ended May 3: High, 23.92; low, 22.71; close, 23.82. Week ended April 26: High, 23.19; low, 22.22; close, 22.81.

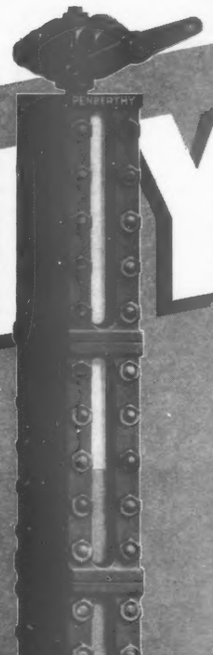
*Detailed information in Market Section.

PENBERTHY *Reflex*
DROP FORGED STEEL
LIQUID LEVEL GAGES



Liquid shows black—empty space shows white. Preferred wherever liquid level must be easily and positively visible . . . and when liquids are under high pressure or at high temperature.

PENBERTHY
DROP FORGED STEEL
*Transparent*
LIQUID LEVEL GAGES



Used to observe color and density of liquids under high pressures, and/or temperatures. Construction is exceptionally rugged . . . similar to Reflex types.

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All Penberthy Gages conform with A. P. I.—A. S. M. E. requirements.

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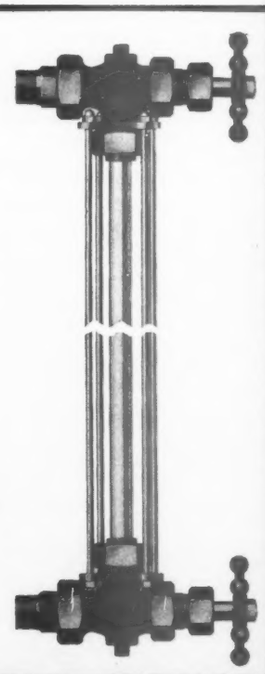
WATER GAGE SET

Water shows black—steam shows white. U-Bolt construction is strongest and simplest to service. Glass replaced by simply removing nuts on face of gage . . . unnecessary to work between gage and boiler.

PENBERTHY
DROP FORGED STEEL
LIQUID LEVEL GAGES

Made of Chromium-molybdenum alloy temperature-resisting steel, extra heavy throughout. Stainless steel trimmed. Tubular glass type gages also available in various other metals suitable for practically all conditions.



## PENBERTHY INJECTOR CO.

DETROIT, MICHIGAN • Canadian Plant; Windsor, Ontario

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# Recyling News

### Ark-La-Tex Refiners To Hold Forum Session

Officials of the Ark-La-Tex division of Western Petroleum Refiners Association announce the entire time of the May meeting of the technical group will be devoted to a discussion of as many as time will permit of the 36 questions that have been submitted by refiners in the tristate area. This meeting will be held May 9, at the Washington-Youree Hotel, Shreveport, La., beginning at 4 p.m.

Questions-and-answers sessions of the association's technical group are becoming more and more popular. They provide a forum where refiners may discuss the intimate problems of plant operation and maintenance, new developments, and changes in refinery processes, laboratory problems, and changes in kind and quality of products. In this respect the questions submitted for discussion at the May meeting are typical, being varied in scope, and indicative of the thought refiners are giving their problems.

A. W. Trusty, chief chemist of the Arkansas Fuel Oil Co., who has served as chairman of each of the questions-and-answers meetings, will serve again in this capacity at the May meeting.

### Sweetgrass Refinery Will Resume Operations Soon

COUTTS, Alta.—The Sweetgrass Oil & Refining Co. has secured an importers' permit from the Canadian Government and is reopening its plant at Sweetgrass, Mont. H. F. Patterson of Billings is manager and Thomas Kimbrough of Powell, Wyo., is plant superintendent. The plant is being reconditioned and refinery operations are to be resumed in the near future. A 30-acre site in West Coutts, adjacent to the plant, has been secured where a bulk station will be constructed and connected by pipe line with the refinery.

### Tide Water to Complete New Catalytic Unit in June

BAYONNE, N. J.—Tide Water Associated Oil Co.'s new Houdry catalytic cracking plant is scheduled for completion in its refinery here by the middle of June.

Completion of the plant was delayed because of the labor dispute at the Allis-Chalmers plant, which holds the contract for a large turbine that is an important part of the cracking unit.

In reporting on refinery operations before stockholders at the company's annual meeting in New York May 1, William F. Humphrey, president, said an increase in capacity of the Tide Water alkylation plant at Avon, Calif., has been authorized.

# Natural Gas

### Use of Sweet Gas for Carbon Black Argued in Texas Senate

AUSTIN, Tex.—Use of sweet gas in the manufacture of carbon black, as proposed in a bill introduced by Sen. Grady Hazlewood of Amarillo was discussed at length in the Texas Senate on Monday. The bill would empower the Railroad Commission to permit use of sweet gas for carbon-black manufacture where it is produced in a field common with sour gas, but where no market or pipe-line outlet exists for the sweet gas. The commission would ascertain whether the sweet gas is unfit for fuel or lighting purposes and whether it is acceptable by pipe line or other market purchasers.

### Plans Progress to Use McKamie Natural Gas

EL DORADO, Ark.—Plans for utilization of sour gas from the McKamie field, South Arkansas, are under consideration by Carter Oil Co., producer in the field, and Arkansas Power & Light Co.

Carter has announced plans for a treating plant to sweeten the gas sufficiently for its use in a proposed $3,000,000 gas-fired steam-generating plant capable of producing 30,000 kilowatts.

# Recycling News

### Magnolia Granted School-Land Leases for Recycling Project

The School Land Commission on Monday granted Magnolia Petroleum Co. leases on two 80-acre tracts of school land to round out the company plans to place in operation a gas-recycling plant. W. R. Wallace, Magnolia attorney, and Louis Campbell, general manager of Oklahoma for the company, appeared before the land-office commissioners. The school-land leases were needed, they said, to round out the properties into a communitized lease for the recycling operation.

Magnolia proposes to construct a $1,000,000 recycling plant at Oakwood as soon as sufficient gas is made available. One well has already been drilled and others are planned.

### La Gloria Recycling Plant To Become Active This Month

LA GLORIA, Tex.—Operation of the La Gloria Operators Committee recycling plant in the La Gloria field, Jim Wells and Brooks counties, Texas, is scheduled to start this month. The plant will have a daily capacity of 150,000,000 cu. ft. daily. Engineering data indicate that recovery from La Gloria recycling operations will be about 0.8 gal. per 1,000 cu. ft. of gas processed.

La Gloria Operators Committee recently discussed addition of another unit to the project. The unit under consideration for addition to the plan would embrace Sections 12, 6, 14, 3 and adjoining tracts in the Brooks County portion of the field.

### Lone Star May Recycle Willow Springs, Tex., Gas

LONGVIEW, Tex.—Roger Lacy of Longview, Tex., has sold a half interest in gas-producing properties at Willow Springs, Gregg County, Texas, to the Lone Star Gas Co. of Dallas. The consideration for two completed Pettit gas wells, one drilling well and considerable acreage was reported to be $200,000.

The sale indicates that Lacy will abandon plans to seek a franchise to distribute gas in Dallas, now served by Lone Star. In connection with the gas-property sale, the possibility of recycling gas at Willow Springs also is indicated.

# Natural Gasoline

### Natural-Gasoline Yield Increases in California

LOS ANGELES, Calif.—Natural-gasoline production in California increased to 47,607,147 gal. in March, compared to 44,308,407 gal. in February. The 87 active plants treated 30,888,398,000 cu. ft. of gas during the month against 28,894,956,000 cu. ft. processed in February.

Details of March operations by regions and districts are shown below:

| | Gas treated (1,000 cu. ft.) | Natural gasoline produced (gallons) |
|---|---|---|
| San Joaquin Valley— | | |
| Belridge | 3,671,933 | 2,089,874 |
| Elk Hills | 20,742 | 48,102 |
| Kettleman Hills | 7,851,653 | 9,262,655 |
| Midway-Sunset | 977,260 | 1,753,170 |
| Mountain View | 160,200 | 263,230 |
| Miscellaneous | 2,601,107 | 1,868,089 |
| Coastal district— | | |
| Elwood | 355,062 | 429,686 |
| Santa Maria | 205,223 | 497,345 |
| Ventura Avenue | 3,430,704 | 4,871,612 |
| Miscellaneous | 798,532 | 703,484 |
| Los Angeles Basin— | | |
| Brea-Olinda-Coyote | 418,661 | 1,524,187 |
| Dominguez | 1,414,092 | 2,138,917 |
| Huntington Beach | 734,317 | 2,579,100 |
| Long Beach | 2,111,392 | 7,485,116 |
| Montebello | 1,646,296 | 1,854,502 |
| Richfield | 170,406 | 578,154 |
| Rosecrans | 1,263,521 | 1,373,461 |
| Santa Fe Springs | 1,278,408 | 4,725,971 |
| Torrance | 195,091 | 625,395 |
| Miscellaneous | 1,683,798 | 2,935,097 |
| Total (all fields) | 30,888,398 | 47,607,147 |

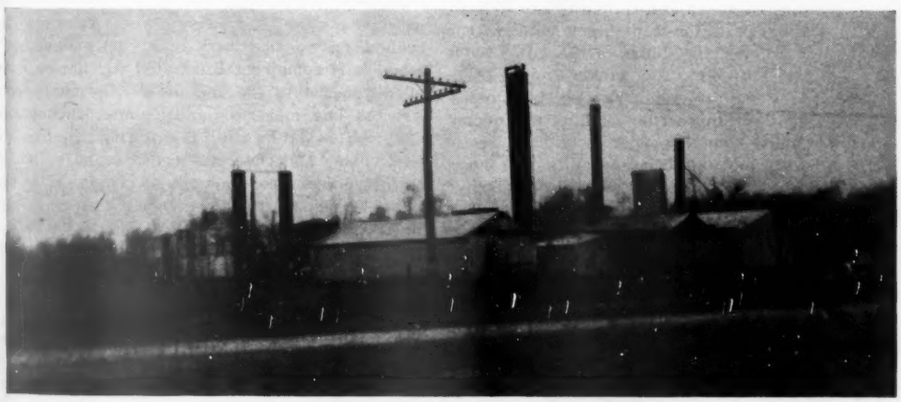
**DISTRIBUTION**

| | Gallons | Gallons |
|---|---|---|
| Stocks beginning of month | 1,923,402 | |
| Production during month | *47,607,147 | |
| Delivered to refineries | | *47,430,637 |
| Blended at plants for production of motor fuel | | 17,866 |
| Losses | | 50,208 |
| Stocks end of month | | 2,031,838 |
| Total | *49,530,549 | *49,530,549 |

| | Barrels |
|---|---|
| Liquefied-petroleum-gas production | 141,881 |
| Motor-fuel production | 425 |

*These items were overstated by 183,773 gal. in February.

## NEBRASKA PRODUCING & REFINING CO.'S PLANT AT SALEM, NEB.



Second plant to be built in Nebraska as a result of the discovery of the Falls City pool is that of Nebraska Producing & Refining Co. at Salem, Neb. The 3,000-bbl. skimming plant manufactures gasoline, kerosene, distillate, gas oil, diesel fuel, fuel oil and road oil. The company is headed by John Peters, formerly vice president of the Egyptian Producing & Refining Co. at Centralia, Ill. John Windle is vice president and Harry Huston, secretary-treasurer. The plant has been in operation for several months, processing Falls City crude.

## Natural Gas Places Support of Defense As No. 1 Objective

*((Continued from Page 21)*

its effect at various locations on this system."

Other prepared papers discussed pipe-line flow calculations and pipe-line flow calculators. Engineers of the Bureau of Mines presented a report covering the water content of compressed gases. S. D. Bechtel, W. A. Bechtel Co., explained recent improvements in equipment and their application in the laying of pipe lines.

There was wide interest in the report of John A Clark, chief engineer, Hope Natural Gas Co., who described the operation of a commercial plant of the East Ohio Gas Co., for the liquefaction, storage and regasification of natural gas. This paper appears on Page 57 of this issue. Several operating features of the plant were described in the March 20, 1941, issue of The Oil and Gas Journal, Page 46, and in the October 17, 1940, issue, Page 48.

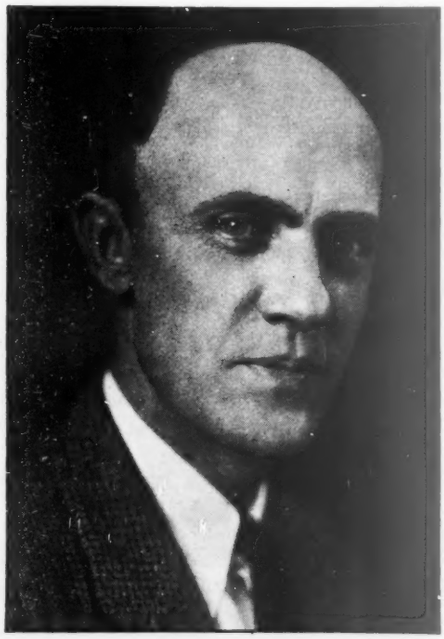
Other practical problems of those in charge of laying and operating lines included jacket-water cooling and treating, mufflers, gas cleaners, lubrication, cathodic protection, welding and metalizing.

### Production Problems

A large part of one production conference was devoted to recent developments in shooting and acidizing of natural-gas wells. These reports showed that while progress in this field has greatly increased the current production of wells and added materially to the ultimate recovery of many old fields, each area presents different problems which should be carefully studied. The symposium on this subject included the Texas Panhandle, Hugoton, Kans., Monroe, La., and eastern fields.

Problems incidental to the disposition of salt in producing formations were discussed and cathodic protection as a means to prevent corrosion of well casing was suggested. J. G. Dickinson, superintendent of production, Texoma Natural Gas Co., Amarillo, Tex., explained a method of completing gas wells in order to obtain information on reserves.

Special importance was attached to the papers presented at the technical sessions because of a plan adopted by the association in regard to awards. All papers presented at the Natural Gas Section meetings will be judged as to their value to the industry. The papers passed by the awards committee will become a part of the annual proceedings of the Natural Gas Section.



***B. R. Bay, nominated for vice chairman, Natural Gas Section, A.G.A.***

## Axis Powers Apply Pressure On Near East Oil Supply

*(Continued from Page 27)*

lines. This refinery has 6,000,000 bbl. storage capacity and in the last few months immediately preceding the war was supplying an average of 175,000 bbl. per day of refined products. Its capacity is rated at 300,000 bbl. per day and it has cracking capacity of 100,000 bbl. Naft-i-Shah and Naft Khaneh fields in western Iran and Transferred Territory supply small refineries at Kermanshah through a 158-mile 3-in. line and at Khanaquin through a 25-mile line, respectively

On the western shores of the Persian Gulf are the Burghan field in Kuwait where the Kuwait Oil Co. (Gulf-Anglo-Iranian) developed production in 1938; the Damman field in Saudi Arabia operated by California Arabian Standard Oil Co. (Standard of California-Texas) which up to January 1, 1940, had produced 30,000,000 bbl. and had reserves estimated 10 times greater; Bahrein Island, where Bahrein Petroleum Co. (Standard of California-Texas) discovered oil in 1932 and which, last year, produced 7,000,000 bbl.; and Qatar, where a producing well has been completed by Petroleum Development, Ltd. Bahrein Island crude is refined at the 32,500-bbl.-per-day refinery on the island and Damman crude is transported through a 40-mile line to Ras Tanura where some is refined in a small refinery completed last fall. This area depends chiefly on Europe for a market and its loss has been a blow, particularly to Anglo-Iranian which is obligated to pay £4,000,000 to the Iran Government in 1940 and 1941. Egypt, scene of extensive exploration on the past few years, has one important field, Ras Ghareb, which produces the bulk of the country's oil output which last year rose to 6,000,000 bbl. This crude is refined principally in the Anglo-Egyptian Oilfields refinery at Suez.

### Dependent on Western Hemisphere

Great Britain took substantial quantities of Iran and other Near East oil after the war started but these shipments are believed to have been suspended due to lack of tankers and hazards of the long voyage. The United Kingdom is now dependent on the Western Hemisphere for these supplies. With United States flag tankers already transporting Caribbean and Gulf of Mexico oil to North Atlantic ports for transshipment to British and Allied tankers, the duties of the latter have been vastly reduced. The tanker route from Abadan to London around Africa is 11,290 miles against only 2,850 miles from Halifax to London and 3,343 miles from New York to London. President Roosevelt announced last week that 50 more United States flag tankers would be employed in this "shuttle" service, 25 of them immediately.

Great Britain's oil position is secure at present. According to reports vast stocks have been accumulated at strategic points throughout the islands. German bombing, indiscriminate at night, has failed to slow the islands' refining capacity and loss of storage from bombing has been surprisingly small.

Germany's war machine also appears to be amply fueled. L. P. Lounsbury, of the U. S. Bureau of Mines, placed 1940 crude-oil production of continental Europe, west of U.S.S.R., at 56,581,000 bbl. Messrs. Garfias, Whetsel and Ristori, of Cities Service Oil Co., estimated production of petroleum substitutes in that area at 26,962,000 bbl. in 1939. Even assuming that no additional synthetic production facilities were added in 1940, these figures show continental Europe to have a supply of 83,543,000 bbl. annually against peacetime civil requirements of 195,000,000 bbl. Thus Europe normally could be 43 per cent self-sufficient. At the same time Messrs. Garfias, Whetsel and Ristori estimate that civil consumption in German-occupied countries was reduced 80 per cent which, if applicable to the entire continent, would reduce civil demands to 40,000,000 bbl. and leave more than 43,000,000 bbl. or 125,000 bbl. per day for military consumption.

New construction since the war began is known to have added to Germany's synthetic production and resort to substitutes in 1940 and this year was greater than in 1939, the last year for which estimates are available. Dr. Hans Bahr, of Hamburg, estimated Germany's synthetic petroleum production at 17,800,000 bbl. in 1938, close to 49,000 bbl. per day. In addition it is estimated that at no time, even during the severest of R.A.F. raids, was Germany's capacity reduced more than 10 per cent. It is possible that Germany is suffering from lack of quality products but Dr. R. T. Goodwin, Shell Oil Co., Inc., who recently returned from London, said that German aviation gasoline is 87 octane and that by the addition of voetal, a rapeseed product that acts as a detergent, very satisfactory lubricating oils are obtained.

Since neither Great Britain nor Germany is vitally dependent on the Near East for oil, the success or failure of the Nazis' "drang nach osten" probably will have no decisive effect on the war from a petroleum standpoint. However, normal economic operations in Europe are suffering from a lack of oil, a weakness which may grow critical with time and one that Germany can correct if she wins and can transport oil from the vast resources of the Near East.

## Growth of Industrial Demand Promises Record Gas Year

*(Continued from Page 25)*

most doubled the amount of capital employed in the manufacture of automobiles. This was done to illustrate and clarify an often-mistaken idea that as an industry natural gas assumes proportions far in excess of what the average person conceives.

It should be further pointed out that 190,300 miles of pipe line are utilized in the gathering, transmitting and distribution of natural gas.

What the induction of natural-gas service in communities formerly served with manufactured gas has meant in savings to the consumer has been discussed time and again. The consumer's reaction is somewhat illustrated in figures compiled concerning the use of gas in newly constructed one and two-family homes throughout the areas served by natural gas. These figures are preliminary and cover the construction of 95,612 new dwellings. The accompanying table shows the per cent figures for those houses utilizing the major gas appliances:

| | Per cent |
|---|---|
| Cooking | 93.8 |
| Water heating | 95.2 |
| House heating | 87.0 |
| Refrigeration | 12.8 |

Considering that revenue from domestic uses amounts to 57 per cent of the total revenue received from utility sales, and, coupling this with the fact that these homes represent the most modern conception of design and serviceability, it affords additional assurance of the continued progress and expansion of the natural-gas industry.

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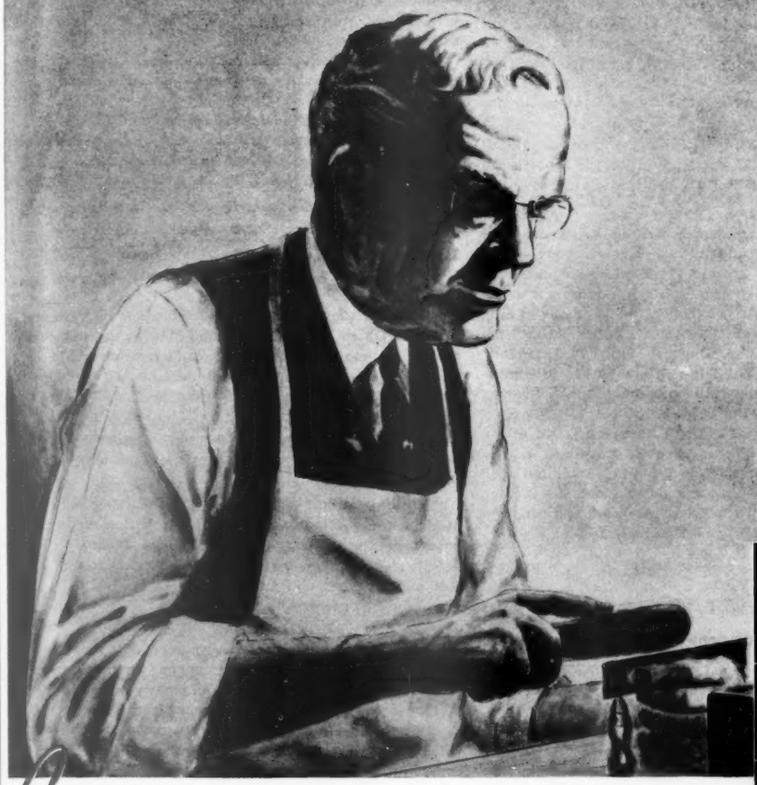

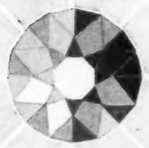

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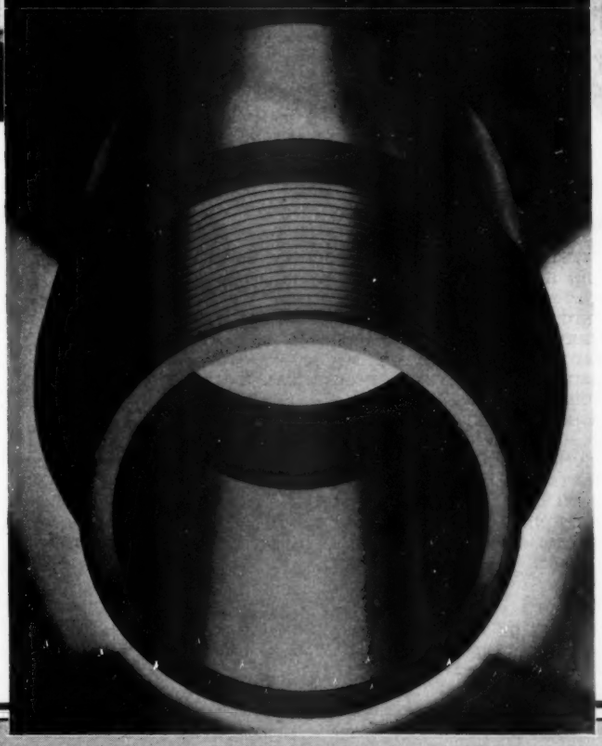

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# PROGRAMS AND MEETINGS

## Oil Scouts Plan Interesting Convention at Dallas

The 1941 annual convention of the National Oil Scouts and Landmen's Association is to be held in Dallas, Tex., on May 29, 30 and 31, at the Adolphus Hotel as general headquarters. The following program has been arranged:

**Thursday, May 29**

10 a.m.—Registration opens. Lobby Adolphus Hotel.

3:30 p.m.—Meeting of officers, directors, and convention committee for general arrangements.

5 to 7 p.m.—Cocktail party for members, ladies, and guests, Petroleum Club, Adolphus Hotel.

8 to 12 p.m.—Dining and dancing, Century Room, Adolphus Hotel.

**Friday, May 30**

9:30 a.m.—Opening session, (For members and guests), Roof Garden, fifteenth floor, Adolphus Hotel, C. J. Bradley, president of association, presiding. (Topics subject to change).

1. City Manager, Dallas, Tex.—Address of welcome.
2. John G. Pew, Sun Oil Co., "The Petroleum Industry."
3. Dr. Joseph E. Pogue, vice president, Chase National Bank, New York, N. Y.—"The Petroleum Outlook."
4. Speaker (Arrangements not completed): "Role of Scout and Geologist."
5. Speaker (Arrangements not completed): "Technical Paper."

12 noon—Ladies' luncheon and fashion show, Century Room, Adolphus Hotel.

1 p.m.—Golf tournament, Lakewood Country Club.

3:30 p.m.—Meeting of officers, directors, and district association presidents. "Discussion of Association Affairs."

7 p.m.—Theater or cocktail party for the ladies.

7 to 10 p.m.—Stag party, Roof Garden, Adolphus Hotel.

**Saturday, May 31**

9 a.m.—General session for members and guests. Roof Garden, fifteenth floor, Adolphus Hotel.

1. E. R. Albert, Jr., Baroid Logging, Tulsa: "Well Logging."

10 a.m.—Business meeting and election of officers (Active members only).

1 to 3 p.m.—Ladies' bridge party and presentation of prizes, Danish Room, Adolphus Hotel.

2:30 p.m.—Meeting of incoming and outgoing officers, President's suite.

4:30 to 7 p.m.—Barbecue, D. Harold Byrd's home, Dallas, Tex.

9:30 p.m. 'til—Dance, Ballroom, Adolphus Hotel 12:30 a.m., breakfast, presentation of new officers, awarding of golf trophies and prizes, Pres. C. J. Bradley presiding.

**General Committee on Arrangements**

R. H. Weaver, second vice president, convention-committee chairman; Edward C. Harman, Seaboard Oil Co., Dallas, general chairman; R. F. Morgan, Texola Producing Co., Dallas, cochairman; S. G. Gladney, Sun Oil Co., Dallas, entertainment; E. L. Wilson, American Maracaibo Corp., Dallas, finance; John T. Langston. Sun Oil Co., Dallas, publicity; Wade Smith, Magnolia Petroleum Co., Dallas, transportation; E. A. Brown. Lone Star Gas Co., exhibits; J. W. Burrage, Lone Star Gas Co., Dallas, program; Duke T. Segrest. Adolphus Hotel, Dallas, hotel reservations; Z. E. Black, Dallas Chamber of Commerce; Troy Stalls, Stanolind Oil Purchasing Co., Wichita Falls, attendance; S. C. McKinney, Shell Oil Co., Inc., Tyler, reception and finance; W. L. Allen, Gulf Oil Corp., Marshall, golf and entertainment.

## Oil Papers Featured in Western Metal Congress

Several papers of special interest to the petroleum industry have been placed on the program of the Western Metal Congress, to be held May 19-23 in the Biltmore Hotel and Pan-Pacific Auditorium, Los Angeles, Calif.

One of these to be delivered by H. W. McQuaid, assistant chief metallurgist of Republic Steel Corp., Cleveland, Ohio, is entitled "Metals Used in the Petroleum Industry, Dealing Particularly With Field Operating and Production Equipment."

Another will be presented by Walter Hildorf, chief metallurgist in the steel and tube division of Timken Roller Bearing Co., Canton, Ohio, the subject being "Metals Used in the Refinery Process."

Mr. McQuaid will speak at 3:30 p.m., Monday, May 19, and Mr. Hildorf at the same hour on the following day.

Prof. Bradley Stoughton, vice president of the American Society for Metals and dean of engineering at Lehigh University, Bethlehem, Pa., will be heard at 11 a.m., Wednesday, May 21, on behavior of superheated metals in petroleum still tubes. He also will give a complete discussion on metals at high temperature in a variety of services.

Many Los Angeles men prominently identified with the petroleum industry are on the general committee of arrangements.

Twenty technical societies are cooperating in the event, among them western branches of the American Petroleum Institute, California Gas and Oil Association, Liquefied Petroleum Gas Association and Pacific Coast Gas Association.

## Arkansas to Celebrate Twenty Years of Oil

EL DORADO, Ark., May 6.—Celebration of "Twenty Years of Oil in Arkansas" will be held in the oil-boom town on June 19, 20, and 21, under sponsorship of citizens who have watched oil become the principal producer of wealth in their state.

The celebration is expected to bring back to El Dorado many oil men from throughout the nation who participated in the exciting days of the early '20s in this area.

Highlights of the celebration will include: marking of the Busey well-discovery site; a historical spectacle based on the state's oil story; an "oldtimers" get-together; an official meeting of the Arkansas Oil and Gas Commission; oil-relic exhibits; an oil men's banquet, and a parade of oil personalities, equipment, state officials, and beautiful oil-territory girls.

Arkansas' first commercial producer was the Busey gusher, brought in on the afternoon of January 10, 1921. The state now ranks high among producing states of the nation, and new development continues to this day. The celebration will recall many of the events which took place not only at El Dorado, but at Smackover, Waterloo, Magnolia, Texarkana, and other points.

The Chamber of Commerce of El Dorado is sponsoring the celebration.

# CALENDAR OF EVENTS

### May

WEST TEXAS GEOLOGICAL SOCIETY, annual spring field trip, starting at Fort Worth and ending at Midland, May 10-11.

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA, midyear meeting, board of directors, Plaza Hotel, San Antonio, Tex., May 13.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, Chicago, May 19-21.

AMERICAN PETROLEUM INSTITUTE, eleventh midyear meeting, Mayo Hotel, Tulsa, May 19-22.

NATIONAL ASSOCIATION OF PURCHASING AGENTS (Oil Company Buyers' Group), Stevens Hotel, Chicago, May 26-29.

NATIONAL OIL SCOUTS AND LAND MEN'S ASSOCIATION, annual convention, Dallas, Tex., May 29-31.

### June

SOCIETY OF AUTOMOTIVE ENGINEERS, summer meeting, Greenbrier Hotel, White Sulphur Springs, W. Va., June 1-6.

ILLINOIS-INDIANA PETROLEUM ASSOCIATION, ninth annual petroleum conference, Robinson, Ill., June 7.

LIQUEFIED PETROLEUM GAS ASSOCIATION, INC., Pacific Coast section, Fairmont Hotel, San Francisco, Calif., June 9-10.

KENTUCKY OIL AND GAS ASSOCIATION, midyear meeting, Lexington, Ky., June 20-21.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, annual meeting of Petroleum Division, Kansas City, Mo., June 16-20.

PENNSYLVANIA GRADE CRUDE OIL ASSOCIATION, annual meeting, Bradford, Pa., June 19-20.

AMERICAN SOCIETY FOR TESTING MATERIALS, forty-fourth annual meeting, Palmer House, Chicago, June 23-27.

### September

AMERICAN CHEMICAL SOCIETY, Atlantic City, N. J., September 8-12.

NATIONAL PETROLEUM ASSOCIATION, thirty-ninth annual meeting, Hotel Traymore, Atlantic City, N. J., September 17-19.

SOCIETY OF AUTOMOTIVE ENGINEERS, national tractor meeting, Schroeder Hotel, Milwaukee, Wis., September 25-26.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, East Texas chapter, annual convention, Adolphus Hotel, Dallas, Tex., September 25-27.

NATIONAL LUBRICATING GREASE INSTITUTE, ninth annual meeting, Stevens Hotel, Chicago, September 29-30.

### October

TEXAS MID-CONTINENT OIL AND GAS ASSOCIATION, twenty-second annual convention, Beaumont, Tex., October 9-11.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, Dallas, Tex., October 16-18.

SOCIETY OF AUTOMOTIVE ENGINEERS, national aircraft production meeting, Biltmore Hotel, Los Angeles, Calif., October 30-November 1.

CALIFORNIA NATURAL GASOLINE ASSOCIATION, Los Angeles, Calif., October 31.

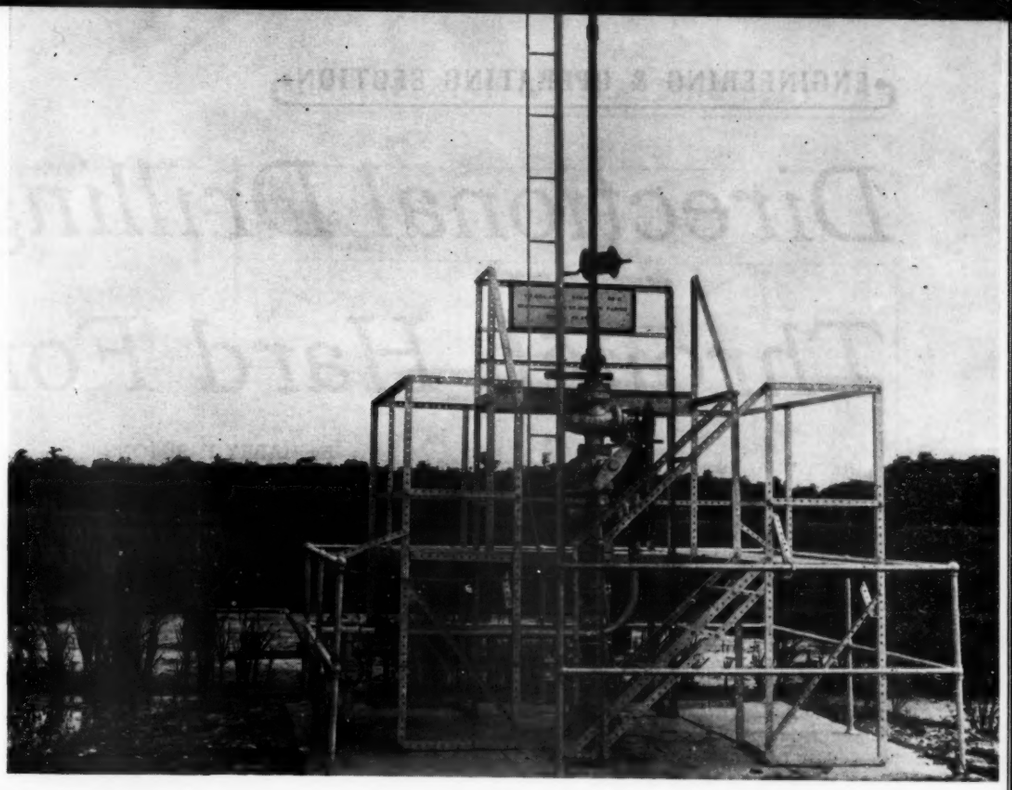
### November

AMERICAN PETROLEUM INSTITUTE, twenty-second annual meeting, San Francisco, Calif., November 3-7

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, Los Angeles, Calif., November 6-7.

### December

NEW MEXICO OIL AND GAS ASSOCIATION, Artesia, N. M., December 3.



*The high christmas trees employed on wells in many Gulf Coast fields often require use of ladders or platforms of some type for running paraffin-scraping equipment and bottom-hole-pressure gages. At this well near New Orleans on the Louisiana Gulf Coast the operator made use of some idle tank stairs and walkway to construct a platform around the well. This enables the pumper to operate more easily the reel for raising or lowering the wire-line paraffin knife*

# ENGINEERING & OPERATION

## *In This Section*

MAY 8, 1941

# Directional Drilling of Holes Through Hard Formations

By HARRY F. SIMONS

DIRECTIONAL drilling of rotary holes has been an accomplished fact for a number of years and has become one of the most useful tools of the petroleum industry. The more sensational-appearing jobs have been in areas where the formations are relatively soft, such as the Gulf Coast[1] and California. In the areas characterized by hard formations the use of this method has not had such outstanding applications but has been employed on a large number of individual wells with excellent results.

Probably the most outstanding job in hard-rock country in recent years has been the drilling of wells under Lake Centralia in the Salem, Illinois, field.[2] All wells were directionally drilled from sites along the lake shore to predetermined points beneath the lake. These wells were completed by cable tools and were later deepened to lower pay horizons by the same method. Total controlled footage drilled amounted to 35,000 ft. with the total horizontal displacement being 5,458 ft. The greatest lateral distance to which a well was directed was 432 ft. The average deflection per well was 248.12 ft.

This instance is cited to show one of the most prominent applications of directional drilling, the reaching of production normally inaccessible by vertical drilling. Other types of jobs include straightening of holes which have drifted from the vertical and which if continued would miss production and the sidetracking of junk or lost tools in the hole.[3,4]

Principal reason for the increasing use of directional drilling in hard-rock areas is the improved technique which has reduced the cost and time required to complete the job. A desired objective may be obtained by using as few as four whipstocks where formerly a great number might have been employed. This saving is accomplished by studying the formation and taking advantage of the normal dip if it is possible to do so. The study of normal bit action and the tendency of a hole to drift has also been helpful and a better knowledge of the effect of weight on the bit has been acquired.

Formerly the plan was to rely almost entirely on whipstocks, the desired deviation being maintained in this manner. If things went well such a job was easy but where geological conditions were not particularly favorable to this method, considerable difficulty was often encountered.

The use of the bottom-hole orientation method has also helped reduce the time required to directionally drill a well. The deflecting tool is run in the hole in the regular manner except it has a special sub just above it. On reaching bottom a surveying instrument is run inside the drill pipe and the latitude and departure of the deflecting tool is obtained. This eliminates the sighting through transits necessary in the other two methods of orientation.

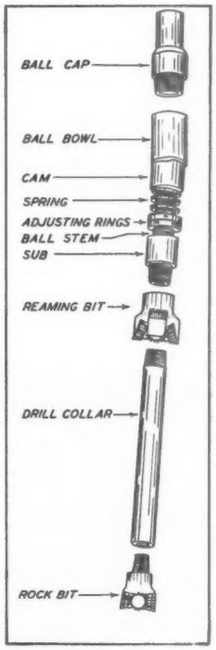
## Normal Deviation

The drilling of a perfectly vertical bore hole is almost a mechanical impossibility. There may have been holes drilled with showed no deviation but all holes surveyed are reported to have shown places where they were off vertical. Holes often drift in a gentle arc while others definitely spiral, generally in a counterclockwise direction; some holes have a combination of the above, spiraling for a distance and then going in a relatively smooth arc. The counterclockwise spiral is caused by the right-hand rotation of the bit, which is accompanied by left-hand rotation of the cones.

The direction of the deviation may be either updip or downdip; the former being true where the formations have a low angle of repose and the latter being the case when a high angle of repose is encountered. The best explanation advanced for the deviation going updip is the tendency of the drill collar to assume a position normal to the bedding plane of the formation.[4]

*Directional surveys being run on wells along strips in Salem, Ill., field. The wells were already completed and it was necessary to use a mast for the work, special crow's-nest being built for the derrickman. The Anderson method of surveying was used.*

The characteristics of bore holes to drift are now used as part of the directional drilling technique. The tendency for the hole to spiral, or "walk," is recognized and allowance made when setting the whipstock and later when varying the weight on the bit and the drill-collar arrangement. It has also been found that in areas where little trouble is experienced in keeping the holes straight, the directional drilling of a hole is greatly simplified. Where trouble is experienced in keeping the hole from drifting, directional drilling is more difficult.




*Knuckle joint used for sidetracking gives a high angle of kick.*

Directional holes have been drilled with a deviation from the vertical of as much as 45° and some engineers believe that it is easier to maintain a high angle than it is a lesser one. Other engineers prefer to start higher and maintain a lesser angle over a greater distance. The claim for this method is that it requires fewer whipstocks and less time and the wear on the drill pipe and equipment is reduced. Experience has shown, however, that drift angles at about 8° to 10° maintain direction very satisfactory in most conditions.

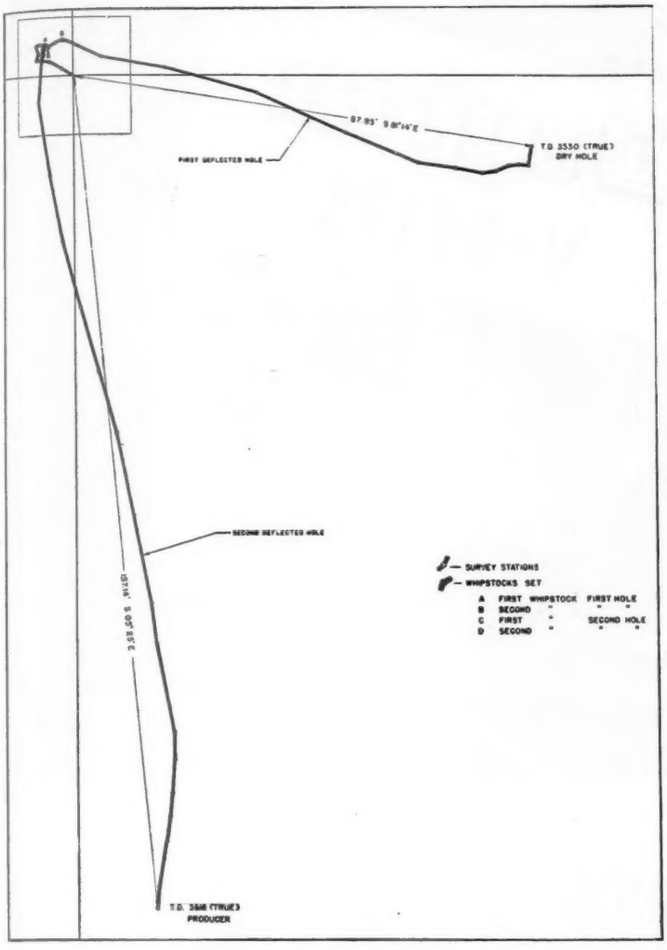
The amount of deviation obtained with any number of whipstocks is dependent on many factors including the point at which directional drilling is started, the depth of the objective, formations penetrated, dip and strike of the beds. In the Salem field of Illinois a horizontal displacement of over 400 ft. in 1,800-ft. vertical depth was obtained through the use of four whipstocks. The angle of deviation was approximately 22°.

Another hard-rock area where directional drilling is comparatively easy is the Cement, Oklahoma, field. There also have been a relatively large number of directional jobs successfully completed with a minimum of difficulty and time in the Kettleman Hills and East Coalinga fields of California.

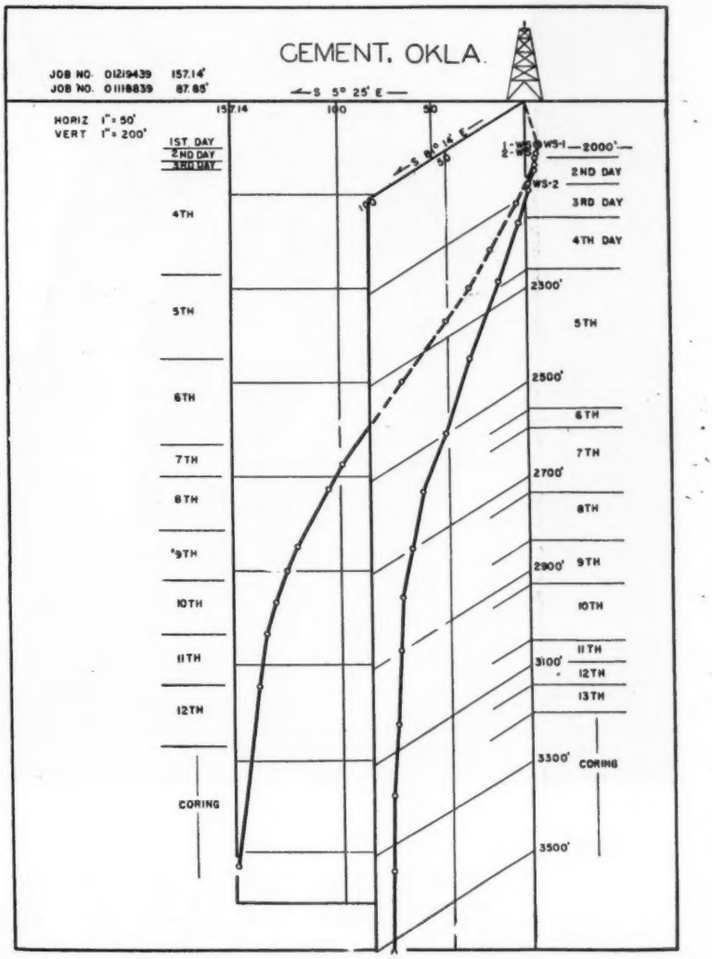
## Economical Measure

Directional drilling is employed more frequently at the present time as a money-saving measure. This may embody a complete plan of exploitation or it may be necessary to overcome some obstacle which has arisen during the drilling of a well. Where location costs are high (swamps, marine and dense forests), the drilling of multiple wells from an enlarged single location is a money saver; locations inaccessible for any reason may be similarly classified. Dry holes in fields producing from lime horizons or lenticular sands are often turned in to producers by backing up and whipstocking.

There has been an increasing use of directional drilling for the straightening of holes deviating from the vertical and for the sidetracking of junk and tools lodged in the hole. The straightening of




*Horizontal plan of well which was directionally drilled to two destinations, the second resulting in the finding of good production. Note that both holes are well within the limits of a 10-acre location*




*Vertical plan of well which was first directionally drilled by setting a whipstock on bottom and then later turned to another destination by running whipstock in open hole. The first hole failed to find production, but the second resulted in a good well*

a crooked hole is an additional expense regardless of the method used. The rotation of the bit at high speeds and very light weights is effective in getting the hole back on its vertical course, but it is a costly and time-consuming method. Shouldering or underreaming, followed by ratholing on the low sides, are also costly in rig time. In some cases 2 and 3 weeks may be consumed in straightening a hole during which time only a very small amount of additional hole is made. Putting the well back on its proper course with the aid of a whipstock would require only a few days and the cost of equipment and services is more than repaid by the saving. The same is true of side tracking of a fish when it becomes evident that washing-over methods are encountering considerable difficulty and the time consumed is mounting. An early decision to salvage as much of the hole as possible and whipstock around the remaining fish results in a substantial economy. An unusual job of this type consisted of side tracking a fish, reentering the old hole and successfully completing the well.[6]

## Sidetracking

The sidetracking of a hole around an obstacle is one of the easiest jobs encountered by the directional drilling engineer. In this type job it is only necessary to start a new hole at an angle to the old one and, after sufficient hole has been made, allow this new hole to assume a vertical course. Surveying of the hole in such cases is at a minimum.

The hole is bridged and a cement plug run, after which part of the plug is drilled out to provide a seat for the whipstock. The kelly is adjusted so that it is not necessary to make a connection until after some hole has been made below the bottom of the whipstock. When formation cuttings begin to appear it is evident that the sidetracking has been successfully started; if no formation cuttings come to the surface it is an indication that the bit reentered the cemented portion of the hole and that another whipstock will be needed.

As soon as the formation has been entered, new hole can be made. After more than 100 ft. of new hole has been made, the chances of running into the old hole are quite small and it is safe to resume drilling in the normal manner. Where it is desired to reenter the old hole as is sometimes the case, the new hole is pushed to one side just enough to get by the fish and then allowed or aided to come back to the old hole. At the present time a fish in the deepest well in Michigan is being sidetracked while it is making considerable gas; this means that surveys and whipstocks must be run under pressure through the blowout preventor. The method being employed is essentially the same as that described above.

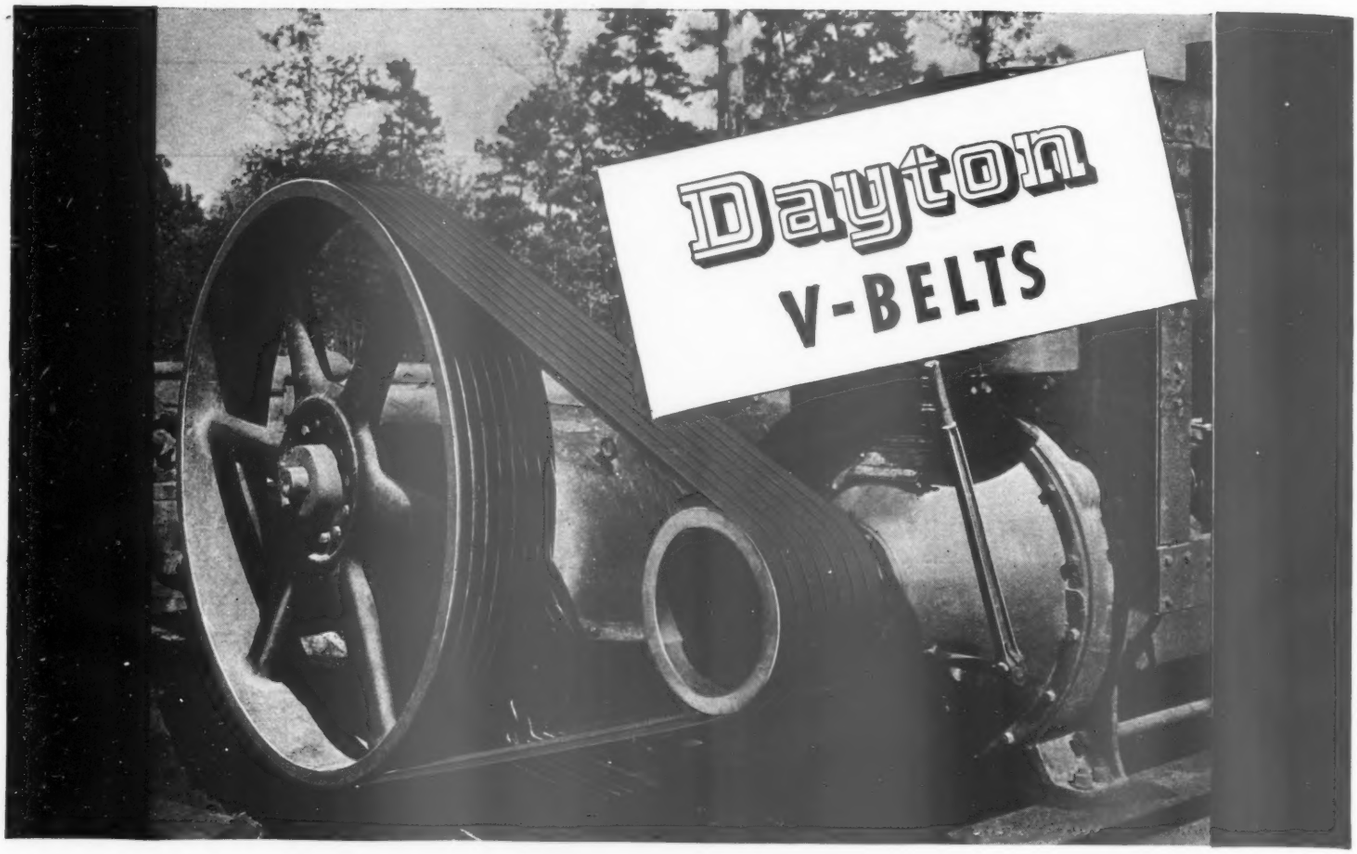
In sidetracking with a knuckle joint a bigger kick is obtained than with a whipstock but direction in hard-formation areas cannot be controlled as easily. A whipstock is not used with a knuckle joint although at the present time work is being done on a combination method which uses both tools at the same time. Where there is considerable cavings in the hole, a knuckle joint can be run to bottom but considerable difficulty would be encountered in setting a whipstock. Decision whether to run a whipstock or knuckle joint is dependent on the preference of the operator and the conditions in the well.

A pilot bit and reaming bit are run on the knuckle joint below the cam. The reaming bit is from 2 to 3 in. smaller than the hole in which the tool is run and the pilot bit is 2 or 3 in. smaller than the reaming bit. Both bits are of the rock-bit type when sidetracking in medium and hard formations. After making the rathole, another bit is run to ream the hole to gage. A single-shot survey to determine direction and amount of deviation may be run before or after reaming. The procedure is the same with both the knuckle joint and whipstock.

## Straightening

Edge wells may often miss production even when they are drilled within the permissible limits of deviation set forth in the contract. (For table of horizontal displacement per foot of hole for each degree deviation see Section T, Drilling Equipment Directory.) Other holes need to be straightened because they are approaching or are beyond the contract limits. The straightening of a hole is a controlled directional-drilling job in reverse.

The hole must be surveyed to determine its course and the amount of deviation at various points; the point at which to begin straightening and the method to be employed is determined by this survey. For holes having a deviation of

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less than 5° a single whipstock may be set at 180° to the drift of the hole. After the hole starts back toward a vertical course it may be kicked back by putting additional weight on the bit. Sometimes a second whipstock may be necessary to get the hole back on a vertical course.

Generally in modern drilling the drift encountered in a bore hole is not over 5° as periodic straight-hole surveys run with the drilling-rig instruments show when deviation becomes serious. Holes drifting beyond 5° are generally located in areas where the formations dip steeply and the straightening up is made more difficult because it is necessary to buck the formations. Following the survey of such holes the first whipstock is run so that the hole will be turned, a second is run which continues the turn and starts reduction of the drift and a third is later run which directs the bit back toward the vertical.

It is sometimes found that a considerable deviation exists after considerable hole has been made and it is necessary to plug back and redrill part of the hole. The principle is the same except that the engineer is allowed more latitude in picking the formation at which the new hole is to be started. In such cases a shale section is selected if possible although a broken-lime section is reported to be almost as good; however, it is not necessary to start the new hole in such a section as it is possible, although more difficult, to take off in a hard formation.

### Controlled Directional Drilling

The jobs requiring the most surveying and careful application of directional-drilling technique are those in which a predetermined point is designated as the bottom of the hole. This may be necessary for the purpose of obtaining the desired drainage of the formation or for a relief outlet of a wild well. Depth and other conditions determine just how close the hole comes to this objective but in hard-rock areas of medium depth it is possible to bottom a hole within a very few feet of the point selected. The directional job may be performed from a hole already drilled or a new well may be employed; in either case it is possible to select the point at which deviation is to be started. The number of whipstocks needed will depend on the displacement desired, the depth of the hole and the formation. In one Oklahoma field jobs have been successfully completed with a single whipstock.

Hole is made as fast as possible in the regular manner down to the point selected for the start of directional drilling. The upper hole is drilled straight and the practice of tilting the rotary table and starting the deviation from the surface has been abandoned. This practice did not aid materially in reaching the objective and had a detrimental effect on the drilling equipment.

In some fields it is necessary to set the first whipstock to allow for the tendency of the bit to walk but in others it is not necessary. The whipstock is oriented in the hole in the usual manner.[4] In Oklahoma formations the first 12 to 14 ft. of hole below the whipstock is made with light weight on the bit (two points or 4,000 lb.) but in Illinois the application of weight is started as soon as the bottom of the whipstock is passed. After the rathole has been made a single-shot survey is run to check the work and the hole is then reamed.

The first run after reaming is made with a short hookup generally consisting of bit and reamer on the bottom of the drill pipe. This arrangement acts as a fulcrum in kicking the hole further away from the vertical and allows the maximum benefit to be gained from the original angle provided by the whipstock. From six to eight points weight is run on the bit at this point with the speed of rotation being around 40 to 60 r.p.m.

To hold the angle of deviation and direction obtained, the lower assembly is stiffened by the addition of a drill collar. It is possible in many cases to increase the angle of deviation without the use of another whipstock; this is done by controlling weight on the bit, speed of rotation and pump pressure. The best position for a reamer, in case one is used, is below the drill collar as in this position it will aid most in maintaining or increasing the deviation. Speed of rotation and weight on the bit is approximately the same as that used in a straight hole or normal drilling. Generally this is from six to eight points and from 75 to 90 r.p.m.

Some holes have a tendency to walk away from the destination. If it becames evident that the walking is more than allowed for in setting the first whipstock, the engineer on the job will need to arrange to kick it back. This requires another whipstock which is set so that the hole is directed back beyond the line of closure, thus allowing for further walking of the hole.

The course of the bit must be controlled and it is necessary to run single-shot surveys at regular intervals to check the progress. The hole may begin building up more drift than is wanted and make it necessary to begin straightening the hole. Each engineer has his ideas on this subject and there are several ways of accomplishing this; the more notable being faster rotation, less weight, and increased pump pressure. The hole is not allowed to lose its drift once the deflection has started; if the angle begins to drop a whipstock is run to put the bit back on its proper course. This is the reason why holes having a high angle of drift require more whipstocks.

The above are only three of the many types of jobs on which directional surveying and directional drilling are employed and it is not intended as a complete list of the applications of this method. No mention has been made of whipstocking out of casing to exploit upper pay zones after the lower horizons have been exhausted. In many cases the upper zones were inadequately logged and a search must be made for them; infiltration of the mud into the formation around the original bore hole also affects the production obtained from the upper zone. Some companies have found that whipstocking aids in locating the upper pay and the drilling of an uncontaminated section results in increased production of the recompleted well.

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## Questions and Answers

**Are more drill collars being used now than formerly in rotary drilling? Is there any formula for determining the number of drill collars to use? How is the amount of drill stem being applied to the bit determined? Is a stream of fluid used to give an up-and-down motion to the rotary drill stem?—U. O. C., Cleveland, Ohio.**

The practice of using more drill collars has increased over the past several years and now most drilling organizations use about 60 ft. instead of the 30 ft. formerly used. The only formula necessary for determining the amount of drill collar to be used is to divide the amount of weight needed on bottom by the weight per foot of the particular diameter drill collar to be used. The weight per foot of drill collars of various sizes can be found in Section G of the Drilling Equipment Directory.

Determining the amount of weight needed on bottom is strictly an arbitrary matter at this time. Several companies have approached it from an analytical angle, with an attempt being made to put enough weight on the bit to actually fracture the formation. The fracturing pressures of formations will vary from 5,000 to 80,000 lb. per sq. in. When weights of this order are applied, the rate of penetration of the bit will increase sharply and will continue to increase in a straight line as more weight is added. Just what the upper limit of increased penetration with added weight may be is not known.

There are two principal difficulties at the present time. The first is a tendency to drill a smaller hole which naturally limits the amount of weight which can be concentrated at any one point in the drill stem. This has led to the use of a drill-collar section as long as 400 ft. The second is an unexplained tendency of the drill collars to break in the joints, particularly where more than 90 ft. of drill collar is being employed. The breaks always occur where there is a reduction in the body of the drill collars.

In areas where the formations are hard, the trouble from drill-collar failure is very prevalent. In fields where the formations drilled are unconsolidated and quite soft, little trouble is experienced even when using drill collars as long as 400 ft. Another factor seems to be the speed at which the drill pipe is turned, the drill-collar failures increasing rapidly as the revolutions per minute are increased.

### Determining Drill-Stem Weight

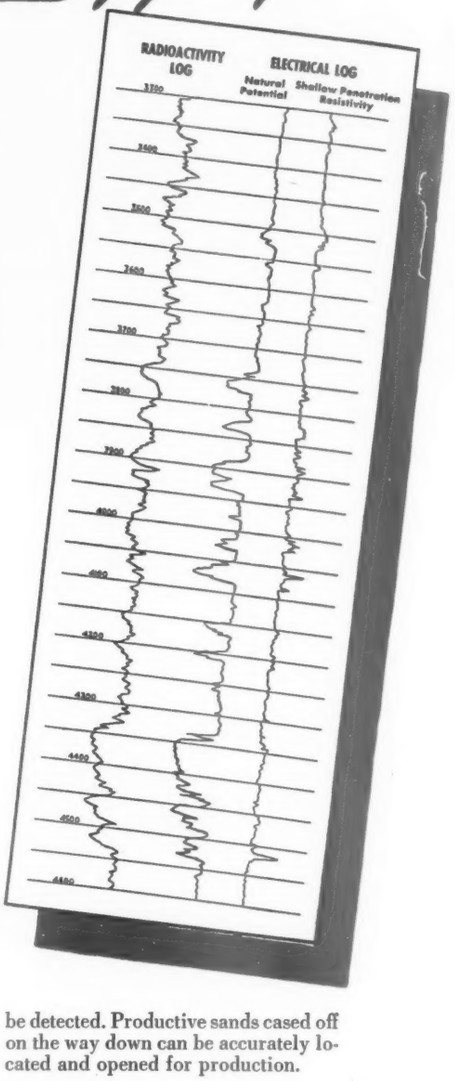
The determination of the amount of drill-stem weight being applied to bottom of the hole can be made with the ordinary weight indicator used on a rotary drilling rig. Knowing the weight per foot of the drill pipe being employed and the total weight of the string, it is an easy matter for the driller to slack off until only the weight of the drill pipe is being supported by the swivel; this leaves the weight of the drill collars to be supported by the bit which is resting on the formation being cut. As it is desired to have the neutral point occurring in the uppermost drill collar, a little of the weight of the top drill collar in the assembly is generally supported by the drill pipe instead of the drill collars below it.

In rotary drilling a stream of fluid is pumped through the water courses in the bit against the cutters and the bottom of the hole. This is not done to cause an up-and-down motion of the drill stem, but it does produce that effect. This can be readily observed on a rotary rig which is drilling at only a few hundred feet deep. While the drill pipe is suspended from the block and not being rotated, there will be noticeable vertical movement of the drill stem. If the bit is very close to bottom, the movement will be greater than it is when the bit is some distance off bottom.

The effective fluid pressure at the bottom of the hole varies with each rig, depending on the size of the pump used and the efficiency of the drill stem. Rigs with large pumps will show more movement of the drill pipe than those with small pumps.

It might be well to point out that the cutting of a rotary bit depends on its turning action the same as an ordinary drill used to cut holes in steel or wood. The pounding action of the pump does have some effect, but it has never been analyzed quantitatively.

# Radioactivity Well Logging

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# Hydrogenation of Coal—

## Insurance for the Oil and Automotive Industries

By W. L. NELSON

**Inquiries as to the status of the coal-hydrogenation process in the United States have greatly increased in recent months, caused mainly by the present war in Europe. At this time the hydrogenation of coal has received but little development in the United States, most of the work consisting of experimental or pilot-plant operations. However, in some European countries, and especially in Germany, coal is a major source of motor fuels and lubricants. Here the author discusses coal reserves in the United States that are suitable for the process, factors that are most influential in the hydrogenation operation and yields of various oil cuts.**

ALTHOUGH the hydrogenation of coal has been suppressed in the United States by the overwhelming competition of the oil industry, the time may come when depleted oil reserves will make it advisable for the oil industry to utilize a combination raw stock consisting of both oil and coal. Such an expedient would not be altogether unwelcome because to a large degree it would tend to level the flush and lean periods of oil-field discoveries, giving greater stability to the industry as a whole and permitting long-time plant programs without enormous discovery programs. Should such a plan become economically feasible, conservation of petroleum reserves would become somewhat automatic in that there would be less incentive to hurry the production of oil from new fields. The market price of crude oil would be more secure.

Controversy over the ability of the oil industry to discover adequate reserves of petroleum is governed by so many variables that to enter the controversy may be idleness. No one can evade, however, the fact that reserves have accumulated in the past at a rate that surprised forecasters and that this record has been maintained even though the consumption of oil has grown many fold. If, however, one should wish to be conservative, he might well fear the enormous demand for gasoline that our rapidly growing motor-transport and aircraft industry will require. In addition to military demands for aircraft fuel, many aviation enthusiasts foresee a use of private aircraft that will rival the private automobile as a consumer of gasoline. Certainly many more private planes will be in use when once our defense-aircraft factories have been relieved of military orders. Whether or not the petroleum industry can continue to locate new oil reserves without materially increasing the cost of production still is open to speculation, and the future of coal hydrogenation lies in the hands of petroleum producers and geologists.

### Cost of Production

Little can be learned of the costs of producing motor fuel by hydrogenation except that the cost is well above petroleum-refinery costs. Commercial coal-hydrogenation plants are operating in Germany and on a small scale in England, but most cost information dates back to the Bergius operations of 1927-30. This process is not entirely comparable with what can be done today because the development of catalysts and construction materials has been rapid—but even with these advancements the total yield of liquid products has not been greatly increased. At that time the cost of operation was stated to be 90 marks per ton of oil (about 10 cents per gallon). In Great Britain a guarantee of a 4-pence-per-gallon preference for motor fuel prepared by domestic processes was established in 1933 (about 8 cents per gallon), but with even this advantage the hydrogenation of coal has not developed on a large scale. Still another method of estimating the cost is in terms of the coal consumed. A total of 3.5-4 tons of coal is consumed (K. Gordon, Trans. Inst. Mining Engs. 82, 348, 1931) in making 1 ton of finished motor fuel. Much of this consumption of coal is required for steam and gas production. Thus, with coal at $2 a ton the cost of raw material alone is over 2 cents a gallon. At the World Petroleum Congress in 1933 the cost of producing gasoline from gas oil in the United States was indicated to be about 6 cents per gallon. It should be noted that the cost of hydrogenating coal is larger than the cost of hydrogenating gas oil.

Although these figures do not indicate any need for immediate concern in the petroleum industry they do show clearly that a minor scarcity of oil or increase in the costs of exploration and production would draw coal hydrogenation into the economic picture. To say the least, it is reassuring to know that vast resources of low-rank coal is available.

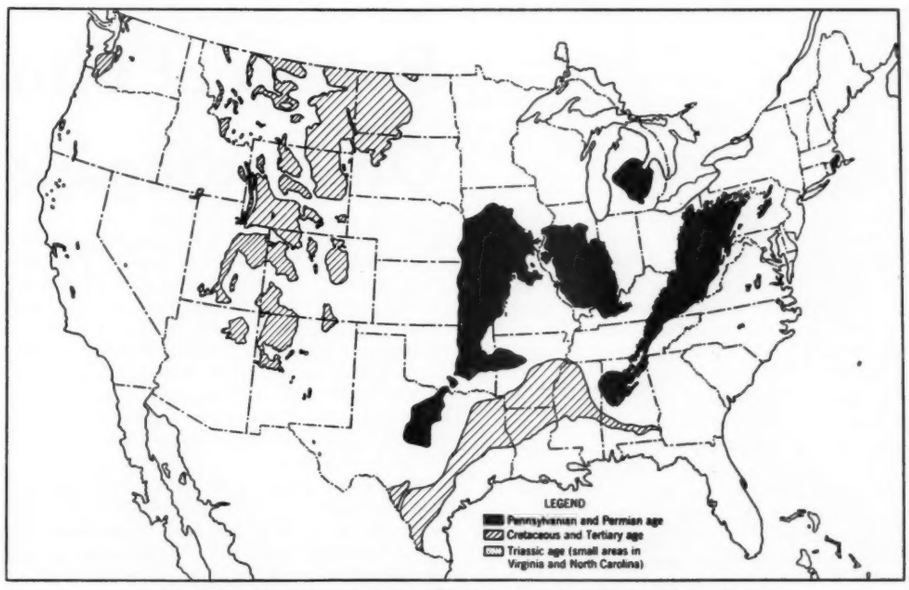

LEGEND
Pennsylvanian and Permian age
Cretaceous and Tertiary age
Triassic age (small areas in Virginia and North Carolina)

*Fig. 1—Coal-bearing areas of the United States (after Geological Survey)*

### Quality of Products

Much is said of the superior products that may be made by hydrogenation and the great versatility of the hydrogenation process, but these claims are ones based mainly on theoretical considerations that have not yet been conducted commercially or have not been important enough to overcome the disadvantages of costly operation. Main among the advantages is the elimination of sulfur and to some extent nitrogen and oxygen from hydrogen-carbon molecules.

Thus, sulfur is eliminated as hydrogen sulfide, more than half of the nitrogen is converted to ammonia (rest as nitrogen bases) and the oxygen is converted into water and carbon dioxide (some phenolic materials). Such materials can be removed from the raw distillates with relative ease. Thus, a large portion of the yield that is obtained from raw stocks which contain large amounts of compounds rich in sulfur and nitrogen may be due to the replacement of these elements by hydrogen. The coal hydrogenation process as now practiced is not suitable for the production of high octane number gasolines. If the process is conducted primarily as a decomposition process, the products consist mainly of aromatic and unsaturated hydrocarbons but excessive amounts of coke are produced in the equipment—whereas if the hydrogenation reaction predominates, the yields are high but the product is of high boiling range and is so highly saturated with hydrogen that inferior low-octane materials are produced. Thus, present commercial operation is a compromise between the two extremes of excessive hydrogenation and excessve decomposition. The selection of suitable temperatures, pressures and catalysts is the only hope of producing products that are com-

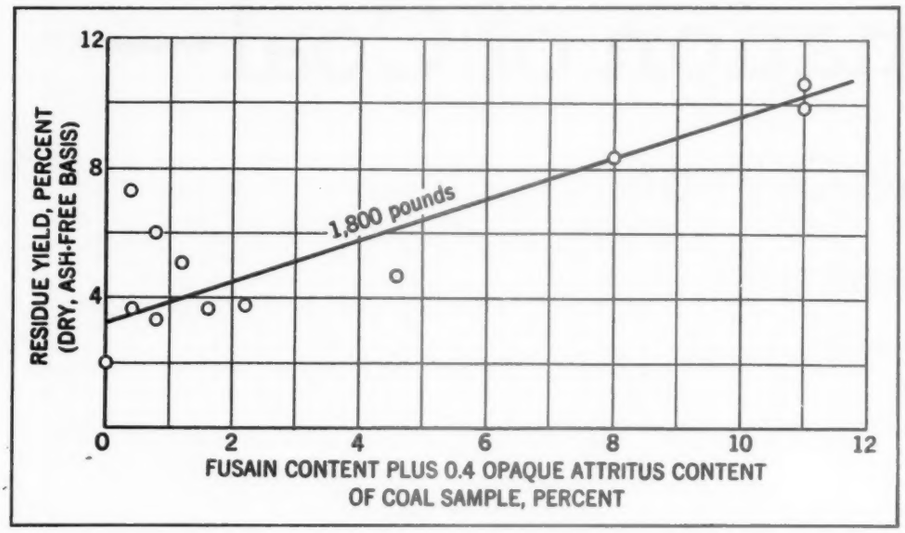



*Fig. 2—Relation between residue yields and opaque-matter content of coal hydrogenated*

parable to those now being produced from petroleum.

### Coal Hydrogenation Process

Some of the factors that are most influential in the process of hydrogenation are:

1. A vehicle or solvent which dissolves a large portion of the coal at elevated temperatures. Solvent-extraction studies indicate that the mechanism of solution involves depolymerization followed by colloidal solution. The ash, fusain and part of the attrital matter are probably not completely dissolved and it will be shown later in the study of coals that these very materials are not acted upon during hydrogenation and do not contribute to the yield of liquid product.

2. The use of agitation during the hydrogenation reaction. The factor has been found to be important in many batch-type tests conducted on a laboratory scale. Commercial plants have not generally resorted to mechanical agitation or shaking of the converter vessels. Controversy arises as to whether or not agitation results in catalytic effects due to washing of the container walls with a liquid.

3. Use of a catalyst. The original Bergius process was supposed to operate by temperature and pressure alone but catalysts have since been found to be highly useful in increasing the yield and rate of reaction. The main catalysts are volatile chlorides, heavy metal sulfides, finely divided metals and alkaline earth metals or their compounds (H. H. Storch, Ind. Eng. Chem. 29, 1367, 1937).

4. Suitable temperatures and pressures. Thus far, relatively low temperatures and pressures have been employed, being 750° to 850° F. and 1,000 to 5,000 lb. per sq. in. Coke formation is excessive at temperatures over 850° F.

The most modern British plant (B. O. Lisle, Ref. Nat. Gaso. Mfr., March 1940, p. 63), that of the Low Temperature Carbonisation, Ltd., interests, utiiizes somewhat the following operations:

1. Coal is ground and washed to an ash content of 3 per cent.

2. Blended with more than 50 per cent of creosote or crude product of the plant.

3. Hydrogenated at 450° C. and at about 300 atm. pressure.

4. Light distillate (raw gasoline) is removed by fractionation and part of other liquids is recycled for additional hydrogenation.

5. The products are (*a*) raw gasoline, 10 per cent; (*b*) diesel oil. 15 per cent, and cresol, 0.17 per cent; (*c*) fuel oil and creosote, 60 per cent; (d) pitch (residue), 20 per cent, from fuel oil.

6. All distillates are washed with caustic soda for removal of tar acids.

7. Gasoline and diesel oil are redistilled.

The gasoline has an octane number of about 75. Final yields of gasoline are much greater than indicated above because of reworking or additional dehydration of the fuel oil and creosote.

### Survey and Evaluation of United States Coals

The U. S. Bureau of Mines station at Pittsburgh, Pa., is making a complete survey of the local coals that are suitable for hydrogenation. The experimental plant was described first in 1937 by H. H. Storch and his associates (Ind. Eng. Chem. 29, 1377, 1937). In this plant a mixture of powdered coal, catalyst and heavy oil (recycle of product) is heated to 806° to 842° F. at a pressure of 200 to 300 atm. in the presence of hydrogen. After reacting for an optimum time, the mass is discharged, allowed to settle, and the oil is centrifuged for the removal of ash, unreacted coal, etc. A portion of the oil is recycled along with new coal, and part may be withdrawn for detailed studies of its composition. The oil is freed from tar bases and tar acids by washing with chemicals and the remaining neutral oil constitutes the finished product except that it has a wide boiling range.

The poorer grades or ranks of coal can usually be hydrogenated with more ease than high-grade anthracite or bituminous coal and hence the low-ranking coals of Montana, Wyoming, Colorado, North Dakota and Texas are of primary importance for this purpose. Coal-bearing areas of the United States are shown in Fig. 1. Few people

*(Continued on Page 64)*

# Bureau of Mines Issues Report On Hydrogenation of Coal

EXPERIMENTS in applying the hydrogenation process to American coals indicate that this country can develop enormous amounts of gasoline and oil from its coal reserves, the Bureau of Mines reports. The bureau's process, if applied to the total coal reserves of the United States, could yield enough oil to supply the nation's needs for almost 3,000 years at the present rate of consumption. Coal reserves are estimated at some 3 trillion tons—enough to yield 3 trillion, 800 billion barrels of oil.

As a preparedness measure, in anticipation of the day when America's petroleum reserves are exhausted or in serious danger of depletion, the Bureau of Mines is making an intensive investigation of all major types of domestic coals to detrmine their ability to yield gasoline and other oil products, Dr. R. R. Sayers, director of the bureau, said. Chemical engineers of the bureau have just completed studies of various coals from four different regions of the United States, bringing to 13 the total number of coals that have been tested at the bureau. These 13 coals represent typical American varieties, ranging from high-volatile bituminous coal down to the lignites.

In a report presented by four Bureau of Mines chemists before the American Chemical Society, meeting in St. Louis, Mo., it was shown that the bituminous coals such as those obtained from the Pittsburgh bed, Pennsylvania, the Black Creek bed, Alabama, and the Lower Sunnyside bed, Utah, can yield an average of 2 tons of oil for each 3 tons of coal mined; and that the plentiful lignite coals, such as those found in North Dakota, can yield about a ton of oil for each 3 tons mined. The tests were conducted at the Pittsburgh station of the Bureau of Mines in a continuously operating experimental plant capable of handling about 100 lb. of coal a day.

Reports from the bureau's laboratory, according to Dr. Sayers, show that in the first stage (after the coal has been liquefied and before the products are "cracked" to produce various compounds), the oil products obtained contain about 20 per cent gasoline, 70 per cent of an oil of medium viscosity and boiling range, and 10 per cent of a heavy oil of high viscosity and boiling range. The yields of crude oil range from 67 to 31 tons per 100 tons of coal, or 168 to 78 gal. per ton of coal as mined. This spread in yield is largely due to variation in moisture and oxygen content of the coals.

The coal-hydrogenation studies carried on by the Bureau of Mines have great value not only as a means of determining the best possible domestic sources of coal for the production of gasoline and oil fuels but also as a means of supplying certain organic chemicals. In this respect it is interesting to note that although the low-rank coals such as lignites yield a relatively small amount of oil when submitted to hydrogenation, such coals are plentiful in the United States.

A description of the methods employed by the Bureau of Mines in hydrogenating American coals and results of its early studies, together with descriptions of the plant, drawings, illustrations, charts, tables, diagrams and photographs are contained in a publication just issued by the bureau. This publication, entitled Technical Paper 622, "Hydrogenation and Liquefaction of Coal," Part 1, by H. H. Storch, L. L. Hirst, C. H. Fisher, and G. C. Sprunk, is obtainable for 20 cents from the Superintendent of Documents, Washington, D. C.

# Results of Initial Operations Of Gas Liquefaction Plant

By JOHN A. CLARK
Chief Engineer, Hope Natural Gas Co.,
Clarksburg, W. Va.*

**A.G.A.—Presented before annual meeting of the Natural Gas Section of the American Gas Association in Dallas, Tex., May 5-7, 1941.**

LAST year at the Atlantic City meeting of the A.G.A., it was my privilege to read a paper describing the development of a new type of storage plant being constructed by the East Ohio Gas Co. in Cleveland, Ohio. This paper is a progress report describing the results obtained by the first winter's operation of this plant, and giving some of the conclusions reached after the first winter's practical operation.

This plant was the outcome of an idea of long standing that some method should be made available to take care of the very few days of extremely heavy load encountered by any natural gas company with a large percentage of its load coming from house heating, without the large expense of laying additional pipe lines. An idea was developed by Mr. Cooper, then president of the Hope Natural Gas Co., that, if a practical method of storing natural gas as a liquid could be developed, the enormous reduction in space occupied, about 600 to 1, might make liquid storage the answer to this problem.

With this idea in view, laboratory experiments were carried out for over a year on the behavior of liquid nitrogen and the effectiveness of various materials as insulating material to keep heat from filtering into a tank filled with this liquid at a temperature of around 300° F. below zero.

### Pilot-Plant Operations

Following the laboratory experiments, a small pilot plant was built at one of the Hope Natural Gas Co.'s plants in West Virginia, capable of reducing to a liquid around 300,000 cu. ft. per day of natural gas and a storage tank holding slightly under 1,000,000 cu. ft. of gas in the liquid phase. This plant was operated successfully for about 6 months, and showed that the idea was perfectly practical and that the loss due to evaporation would not be excessive.

As a result of this experience, it was finally decided by the management that it was practical to build a similar plant on a large scale in the city of Cleveland to take care of the rapidly rising sales, occasioned by the steadily increasing number of domestic consumers.

At that time careful studies were made of two or three different methods of liquefying the gas, and it was decided that at least two of them had about equal possibilities. However, after weighing the disadvantages and advantages of each, it was finally decided to use the cascade system where the temperature is progressively reduced by using, first, an ammonia condensing circuit, then an ethylene condensing circuit, and finally a natural-gas condensing and expansion circuit.

Before attempting to liquefy the gas, it was found necessary to completely remove all traces of carbon dioxide and water, which was done by passing the gas through an amine solution and finally drying it with granulated alumina. It was also found to be of very great importance to remove every trace of lubricating oil put into the gas while being compressed. The plant was designed with a capacity to turn into a liquid 4,000,000 cu. ft. of natural gas per day, and to do this required 3,250 hp. divided up into 600 hp. for raw-gas compression, 950 hp. for recycling-gas compression, 1,200 hp. for ethylene compression and 500 hp. for ammonia compression.

The plant was practically completed, in all essentials, on January 29, 1941, and operation was started at once, and on February 7 the first production of liquid gas was started. This late start, which was due to the inability of some of the equipment manufacturers to make deliveries on schedule, fortunately, did not cause any difficulty as we had a very unusual winter with no cold waves of any importance in December or January. However, the first cold wave hit on February 19, and at that time there were 15,000,000 cu. ft. of liquid gas in storage, and on February 19, 7,000,000 cu. ft. was regasified and put back onto the lines and about 4,000,000 cu. ft. on February 20.

On February 21 the weather moderated and it was possible to go back to liquefying again, and on March 17, when the most severe cold wave of the winter hit Cleveland, there were 50,000,000 cu. ft. in storage. During the two days of this cold spell, the plant fully justified its construction, as 16,000,000 cu. ft. were regasified and put back into the city plant on March 17 and 5,000,000 cu. ft. on March 18.

### No Gas Curtailment Necessary

Due to the inability to foresee what was ahead in the way of weather, and the desire to conserve all liquid possible, only the minimum amount necessary to keep operating conditions normal was used. The result to the gas company of this plant was the ability to handle without curtailment an industrial load of over 40,000,000 cu. ft. per day, which most certainly would have been curtailed or shut off for at least 2 days, with the resultant loss of confidence on the part of the industrial users. Due to the wide variation of the hourly load curve for any one day, it was found that the use of 25,000,000 cu. ft. of liquid during the daylight hours would enable the company to carry an extra connected load of around 40,000,000 cu. ft. per day.

The regasification of the liquid was not started until the pressure in the city plant had started to decline materially, and its use was apparent in a few minutes, and eventually extended back through the main city belt lines over 15 miles. It also developed that the gas fed directly at the point of consumption was much more useful than if fed at any other point, as here it was all clear gain, with no added congestion in transmission lines loaded to capacity.

In regard to the cost of the plant, the figures are not very complete at the present time, due to the fact that the work was not entirely completed last winter, and several construction accounts are not closed out at this time. However, the final cost will run around $1,250,000 divided roughly into: engines with foundations and buildings, $260,000; the three spheres and piping, $420,000, and the remainder in piping, cooling tower, heat exchangers and auxiliary equipment. Also included was an already installed boiler plant which was reconditioned and put in service.

As can easily be appreciated, a great many of the design ideas were entirely theoretical, and every control and safeguard was installed. With the practical experience of the design and operating of this plan, a considerable amount of expense can be eliminated in the next plant. Also a plant built in the heart of a large city required very efficient and expensive muffling for the gas engines, unusual fire protection and also building under union closed-shop conditions. Built under the conditions of the average compressing station, the first cost for the next plant can be materially reduced.

### Operation Costs

Due to the short time the plant was actually liquefying, and the fact that construction work was going on simultaneously, there are no reliable figures on operating costs, but the experience obtained allows a very good estimate of the probable cost of liquefaction and regasification. The plant was designed for and will make, after some tuning up, 4,000,000 cu. ft. per day of the liquid. To fill a storage of 150,000,000 cu. ft. requires a run of 38 days or, allowing for starting and having to cool the piping and tanks down and allowing for a few days delay, say 50 days.

To operate the equipment requires four men on a shift, and figuring the fuel gas at an average cost of 38 cents per 1,000 cu. ft., the cost of filling the three tanks will be: labor, $6,000; fuel gas, $13,700, oil, ethylene and supplies, $4,000, totaling $23,700. The $23,700 divided by 150,000,000 cu. ft. equals 15.8 cents per 1,000 cu. ft.

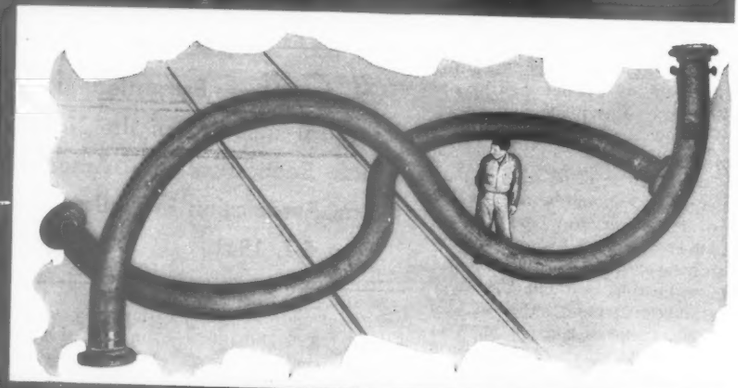
Now assuming that the plant is started up in October and the storage is full by December 1, to keep the plant warm for 4 months will require 38,000 gal. of fuel oil for making steam, while to regasify the 150,000,000 cu. ft. of liquid will require 462,000 gal. of fuel oil or a total of 500,000 gal., equal, at 4 cents per gallon, to $20,000. The labor cost of keeping a crew available during the 4 months will be $12,000, or a total of $32,000. This divided by 150,000,000 cu. ft. gives 21.3 cents per 1,000 cu. ft. for regasification, making a total cost for liquefaction and regasification of 37.1 cents per 1,000 cu. ft.

However, we had expected, that due to a cold wave seldom being of over 3 or 4 days duration and then followed by about a week of warmer

*(Continued on Page 64)*

*Presented under author's title of "Progress Report of Liquefaction, Storage and Regasification of Natural Gas."

# MIDWEST *Alloy* PIPING



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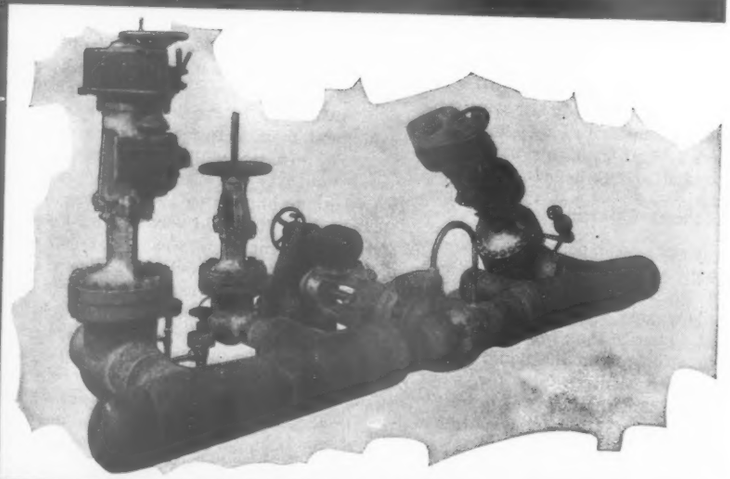
Carbon-Molybdenum header stress relieved in furnace before welding on valves which were welded by preheating and stress relieving with induction method.



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# Cathodic Protection to Prevent Corrosion of Gas-Well Casing

WILLIAM E. HUDDLESTON
Corrosion Engineer, Cities Service Gas Co., Bartlesville, Okla.*

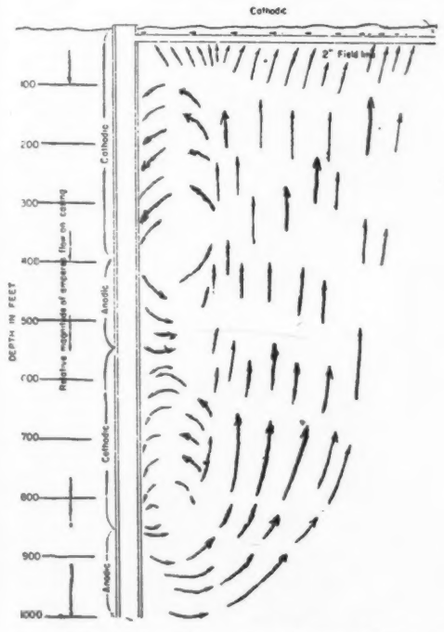
**A.G.A.**—Presented before annual meeting of the Natural Gas Section of the American Gas Association in Dallas, Tex., May 5-7, 1941.

WHEN cathodic protection came in general practice about 5 years ago its application was limited almost entirely to the protection of pipeline systems. During the past 3 years, however, its use has been extended to many other applications, including crude-oil storage-tank bottoms, refinery equipment, water tanks, and marine service.

Before entering into a discussion on cathodic protection as a possible means of preventing corrosion on gas-well casing, let us review briefly the theory underlying corrosion and the working principles of cathodic protection.

### Theory of Corrosion

It is generally known that nearly all metals are chemically unstable. They possess a tendency to revert to a state of "metallic equilibrium." During the process of reaching stability, the metal is usually accompanied by disintegration through corrosion. For example, iron will at once enter into this process when placed in contact with a suitable solution, for a quantity of metal will at once enter into the solution in the form of $Fe^{++}$ ions.



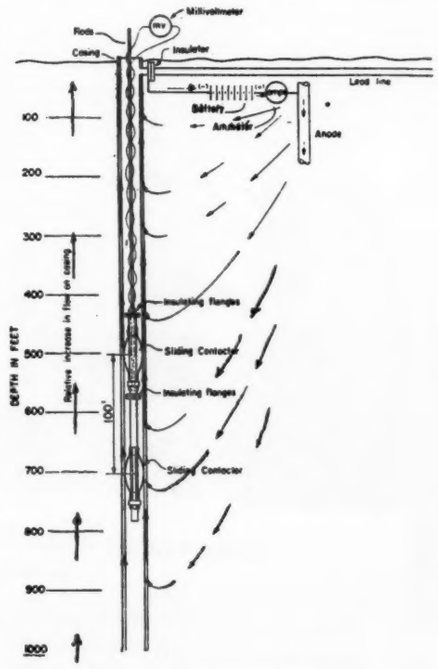




*Fig. 1 (above)—Prevailing current flow on 1,000 ft. of 6¼-in. casing and 2-in. field line. Fig. 2 (right)—Cathodic-protection circuit on well casing*

Now in order for the solution to remain electrically neutral it is necessary that an equivalent number of positive ions be displaced from the solution, and in the case of iron, hydrogen ions are displaced or "plated out" of the solution. Areas of iron surface from which $Fe^{++}$ ions enter the solution are the corroding surfaces and are termed anodic, since they are electropositive in relation to the solution. The remaining areas of the iron surface do not corrode but receive a deposition of hydrogen ions. These areas are electronegative with respect to the solution and are termed cathodic areas.

Thus a piece of iron, when placed in a suitable solution, will have anodic and cathodic areas established over its entire surface, and accordingly part of the surface will corrode and the remainder of the surface will not corrode. Refer to Fig. 1, which shows the anodic and cathodic areas on a string of oil-well casing and its connecting field line. Iron ions enter the soil at scattered points of attack, and corresponding areas of hydrogen deposition are established. Galvanic currents are thereby created which flow from the anodic (electropositive) areas through the soil to the cathodic (electronegative) areas, and a complete electrical circuit is established, similar to that of an ordinary battery. The anodes form the positive electrode, the cathodes the negative electrode; the soil acts as the solution or electrolyte, and the walls of the casing and lines form the external "circuit." The magnitude of the electrical currents thus formed may be readily measured with suitable d.c. electrical instruments, and it is quite possible to determine the location of the corroding surfaces through the use of such instruments.

### Principle of Cathodic Protection

From the foregoing discussion it is obvious that the entire surface of the casing shown in Fig. 1 is either anodic or cathodic, and if certain areas comprise the corroding surfaces the remaining areas do not corrode. The noncorroding or cathodic areas admit a flow of galvanic current from the soil and are sometimes called "gathering" areas. The current flows through the casing wall to the corroding or anodic areas, where they leave the casing and flow into the soil.

If we would direct a flow of sufficient electrical current from the soil onto the entire casing surface we would obviously suppress the anodic areas and render the entire casing surface cathodic with respect to the soil. Thus, the casing would be gathering at all points and would not be discharging current into the soil at any single point, which action would mitigate the corrosion

### Application of Cathodic Protection

The circuit illustrated in Fig. 2 was used to apply cathodic protection to a 1,000-ft. string of 6¼-in. well casing. The field line was insulated from the casing by means of an insulating flange, and increments of battery current were applied until the necessary load was obtained to provide full protection to the entire string of casing.

We assume that adequate protection is obtained when a rising potential gradient is existent along the full length of the casing—beginning at the bottom of the well and terminating at the point where the negative battery cable is connected to the casing. The writer has accepted this criterion for the determination of adequate protection on bare pipe as the result of a number of field tests made on bare lines under cathodic protection.

Results obtained with a cathodic load of 3.95 amperes are graphically represented by curve *A* in Fig. 3. Potential drops were observed along the full length of the casing and it may be noted that with the exception of the dashed portion of curve *A*, an increasing amount of current was collected on the casing surface from the bottom to the top of the well. Curve *B* shows that a load of 6.04 amperes was sufficient to suppress the remaining anodic areas between the 900 and 1,000-ft. depths.

### Measuring Currents on Well Casing

In procuring the necessary data to represent the conditions illustrated in Fig. 1, it was necessary to conduct a measurement of currents on the 2-in. field line and casing using a suitable d.c. millivoltmeter. Special-made contactors were used to contact the casing at various points within the

*(Continued on Page 62)*

*Presented under author's title of "Cathodic Protection as a Possible Means for Preventing Corrosion of Gas-Well Casing."

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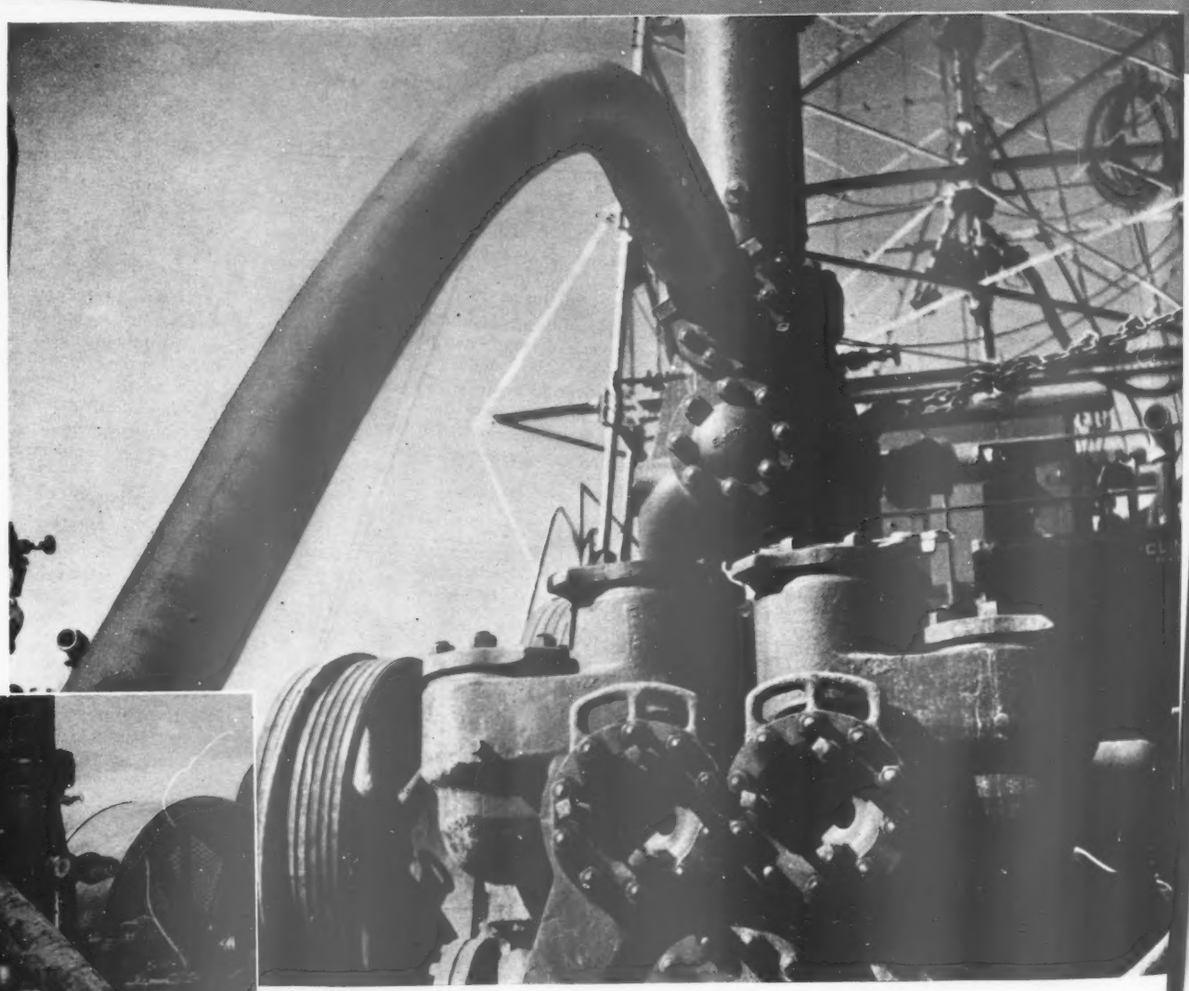

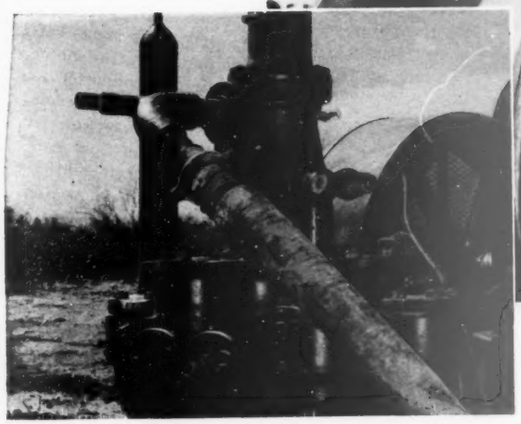

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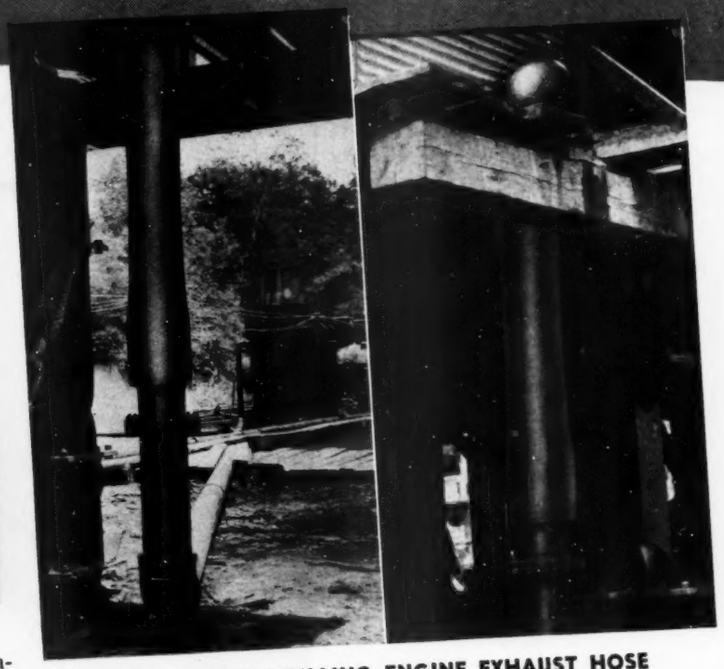

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well. The field-line currents were measured in the conventional manner, viz., by connecting the millivoltmeter to the line at two points 100 ft. apart and noting the drop in potential and direction of current flow.

The same 100-ft. spacing between contact points was maintained on the casing within the well. One of the contactors used is illustrated in Fig. 4. The contactors were fabricated from automobile springs and pieces of 2-in. tubing. The springs were electric welded to the tubing at one end only—the bottom end being left free to move downward through the ring guide as the contactor springs were forced inward upon being lowered into the casing.

One hundred feet of tubing was connected to and above the bottom contactor, followed by the second spring contactor and the string of ¾-in. rods. It was necessary to insulate the top contactor by means of insulating flanges as illustrated in Fig. 5. The five joints of tubing between contactors were centered within the casing by means of special-made wooden insulators placed on each 2-in. collar. A wire was soldered to each individual contactor and extended out of the well for the millivoltmeter leads. The wire was tied securely to each 25-ft. rod by means of insulated tie wires as shown in Fig. 6.

## Power Required for Protecting Well Casing

The power required to protect the 1,000-ft. string of 6¼-in. casing with a 6.04-ampere load would depend on the voltage necessary to obtain this amount of load. Since the voltage is dependent on the circuit resistance it is obvious that the power requirement may be held to a minimum by designing a cathodic protective circuit with the lowest economical anode resistance. The anode used in the foregoing tests consisted of a string of casing in an abandoned well, and the overall resistance was about 0.5 ohm. This resistance would necessitate an operating voltage of 3 volts, and the total power input to the cathodic circuit would be 18 watts to afford adequate protection to the casing tested.

As a matter of comparison, the anode resistance of most cathodic installations on pipe lines ranges from 0.1 to 0.5 ohm, and in extreme cases have run as high as 2 ohms. The power input that would be required for protection of this casing with anode resistances of 0.1 and 2 ohms would be 3.6 and 72 watts respectively.

## Problem of Source of Energy

By the foregoing discussion it may be seen that it is entirely possible to fully protect a string of well casing against corrosion by means of cathodic protection—and at a reasonable rate of power. Longer lengths of casing would require proportionally larger cathodic loads, other conditions being equal.

There are many problems arising in the design of a cathodic protective system for gas-well casing. Perhaps the most serious problem is that of securing a source of energy for operating the protective equipment. Until a method is devised for determining the cathodic load required for a nominal length of casing corroding within an open-flow gas well, the capacity of protective equipment needed will be largely a matter of conjecture.

The power consumption for a given cathodic load depends on the anode resistance, and it might be extremely difficult or even economically impossible to fabricate a suitable anode at some locations.

The sliding contactors were lowered to the 1,000-ft. depth within the 6¼-in. casing in steps of 50 ft., and prevailing anodic and cathodic areas were observed along the casing with the 2-in. field line connected to the well. The results are graphically represented in Fig. 7. Curves *A* and *B* show that large anodic areas prevailed between the 400 and 550-ft. depths and also between the 850 and 1,000-ft. depths. By referring to curve *A* it may be seen that the maximum prevailing current discharge was approximately 0.4 ampere.

The field line was insulated from the well and millivolt drops were again observed along the casing. The results after insulating are represented by curves *X* and *Y* of Fig. 7. Curve *Y* shows that the maximum current discharge was 0.04 ampere after insulating.

The insulating procedure alone reduced the rate

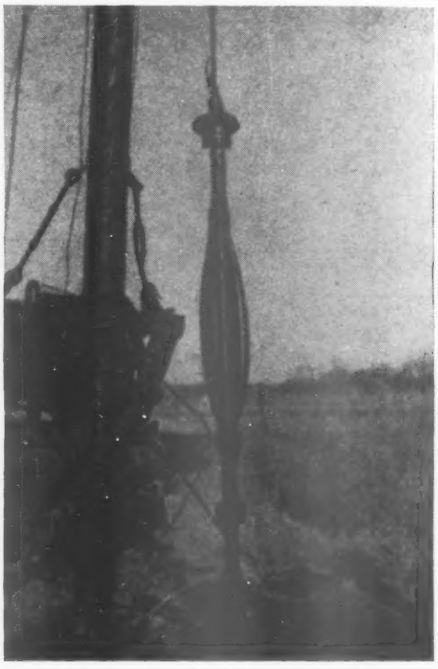


*Fig. 4 (left, above) and Fig. 5 (above)—Contactors used to contact the casing in the well in measuring the current. The top contactor (Fig. 5) is insulated by means of insulating flanges*

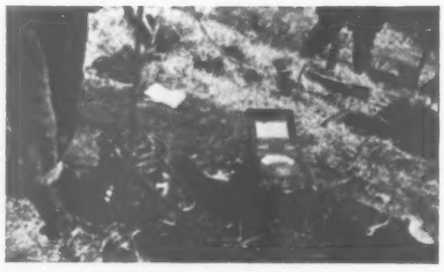
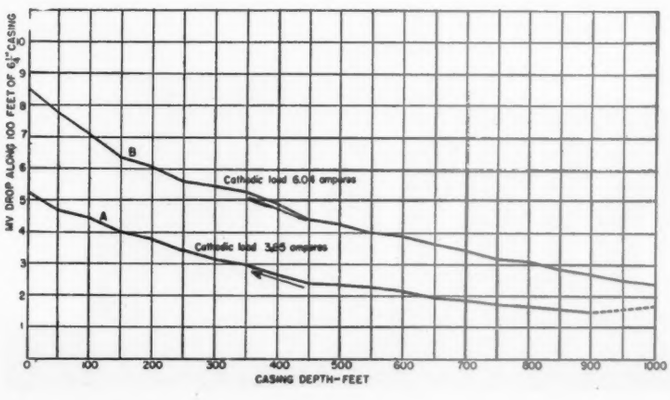
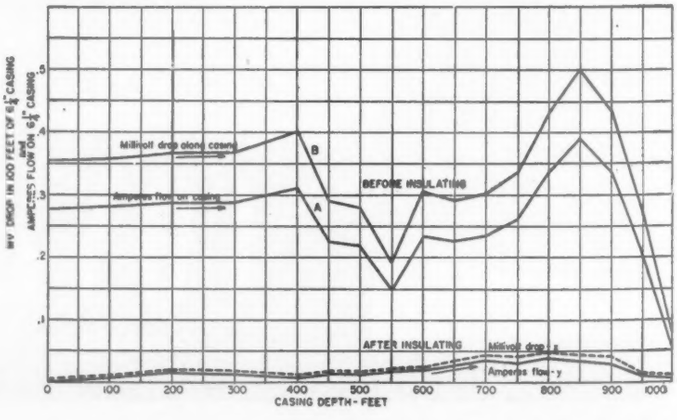


*Fig. 6 (left)—Wires soldered to each individual contactor extend out of the well for millivoltmeter leads, and are tied securely by means of insulated tie wires as shown. Fig. 7 (below)—Graphical representation of current flow on 1,000 ft. of 6¼-in. casing before and after insulating casing from 2-in. field line*

*Fig. 3 (below)—Rising potentials along 1,000 ft. of 6¼-in. casing under cathodic protection*



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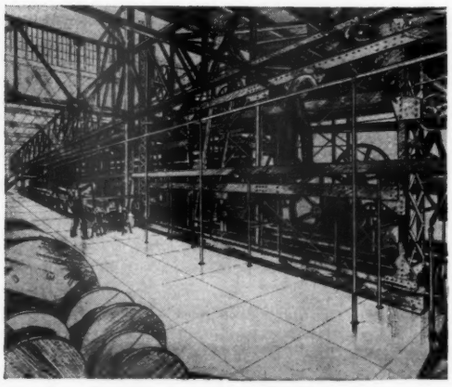

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of corrosion on the casing by approximately 90 per cent.

### Conclusions

With certain limitations cathodic protection may provide an economical means of combating corrosion on gas-well casing.

Many problems arise out of the design of a cathodic protective system for this application, however, the most serious of which is a source of power for supplying the protective energy. Other problems arise in the manner of determining the necessary load requirements for a given string of casing; the fabrication of a suitable low-resistance anode in locations having adverse soil conditions; and the question of being able to apply cathodic protection to a corroding well in sufficient time to save the casing from penetration.

In view of the results obtained by insulating, it is quite apparent that casing corrosion can be mitigated sufficiently by this method alone to prolong the useful life of the casing for several years, provided the well is insulated before the casing wall has reached penetration or near penetration. Obviously the most satisfactory practice would be to insulate new wells as they are completed. Experience gained from insulating gas wells during the past 4 years indicates that, in general, the useful life of well casing can be at least doubled (even when it is subject to severe attack) provided the well is insulated at the time it is connected to the gathering system—or within a few weeks after it has been connected to the gathering system.

Multiple wells connected to the same gathering system demand special consideration, as the corrosion rate on the uninsulated wells will usually be accelerated by insulating all or part of the other wells.

The economic benefits gained by insulating a number of wells can only be determined by actual tests in the field, for some wells corrode at a much higher rate than others.

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## Results of Initial Operations Of Gas Liquefaction Plant

*(Continued from Page 57)*

weather, that it would be possible after a cold spell to refill the tank and to use during a season 300,000,000 cu. ft. of liquid. To do this will require an operating cost for labor, oil, fuel, gas, etc., of $73,000, or dividing by 300,000,000 cu. ft. a cost of 24.4 cents per 1,000 cu. ft. Until the plant has made a full season's run, it will be impossible to say exactly which condition will be the actual one, so, for the present, it seems safe to say that the operating cost will be somewhere between these two figures. In addition to the operating costs, of course, there will have to be added the fixed charges on the first cost of this plant.

One other feature of the plant which was very much discussed during the design was the rate at which heat from the atmosphere would filter into the inner tank through 3 ft. of cork insulation to the liquid at a temperature of around —260° F., and what the evaporation would be per day while the tanks were standing full of liquid, waiting to be used. From the experimental work and the pilot plant it had been figured out that there would be a heat transfer of about 0.25 B.t.u. per cu. ft., and using these data we figured that about 500,000 cu. ft. would evaporate per day.

At the present time, one tank has stood nearly full of liquid for about 3 weeks, with the evaporation from it and the connecting piping going through a calibrated meter. During this time, which included several fairly warm days, the evaporation varied from 105,000 to 115,000 cu. ft. per day. Therefore, it seems quite safe to say that the evaporation with all three tanks full will be around 350,000 cu. ft. per day. This would mean that, with all three tanks full, not much over one-half of the liquid would evaporate in the course of a year.

In conclusion, I think I can say that the management feels that this plant has operated successfully for its first year, and has fully justified the money invested in it. Under certain circumstances, there seems to be a definite place in the industry for a plant of this type, and it seems to particularly suit a company with a long supply line and a heavy house-heating load. However, it must be realized that it is not a "cure-all," and must be carefully engineered to suit each individual case. (Ed. note: Articles dealing with operation of the pilot plant and early experiments appeared in The Oil and Gas Journal as follows: "Experiment With Liquefied Natural Gas for Storage," W. V. Howard, May 9, 1940, p. 18; "Underground Storage of Gas," C. U. Daniels, May 16, 1940, p. 135; "Liquefaction, Storage and Regasification of Natural Gas," J. A. Clark and R. W. Miller, Oct. 17, 1940, p. 48; "First Commercial Liquefaction Plant in Full-Scale Operation," P. A. Condit and W. T. Burgess, Mar. 20, 1941, p. 46.)

●

## Hydrogenation of Coal—

*(Continued from Page 56)*

realize that the western coal repositories are even greater in magnitude than the eastern or Pennsylvania deposits. The deposits rank somewhat as follows:

| | Tons |
|---|---|
| Fort Union area of Montana, North Dakota and Wyoming | 1,202,032,000,000 |
| Green River region of Wyoming | 665,649,000,000 |
| Appalachian region of the East | 550,888,000,000 |

These quantities are so enormous that they serve only to indicate that there is an ample amount of coal in almost any area of the United States. The geologically young western coals are definitely inferior from the standpoint of coking, heating value (or oxygen content) and ash content, but they can be readily utilized for hydrogenation. They are classed as peats, brown coals, lignites, sub-bituminous, and high-volatile-matter bituminous coals.

Since 1937 the U. S. Bureau of Mines has studied a large number of coals (perhaps more than 120) primarily of the low-rank western varieties. The best method yet devised for correlating the oil yield against the type of coal is by a petrographic examination for the following constituents:

1. Anthraxylon (vitrain): A bright constituent containing no plant debris. Easily hydrogenated.

2. Translucent attritus (clarain): Ordinary bright streaky coal, transparent in thin sections. Nearly completely hydrogenated.

3. Opaque attritus (durain): Ordinary dull hard coal. Appears to hydrogenate to the extent of about 62 per cent.

4. Fusain: High carbon minor constituent showing woody structure. Appears to be unacted upon by hydrogenation.

By means of the ash and moisture content, and a petrographic analysis for the above constituents it is possible to estimate the yield of total hydrogenation products (gas, oil, and tars) by subtracting the unreacted constituents from the weight of the feed materials (dry coal and hydrogen). Thus, the ash and fusain go completely to the residue and about 38 per cent of the opaque attritus goes to the residue. A comparison of the actual yields of residue with the computed residue is given in Fig. 2. Another fact that has been established is that coals which contain more than 89 per cent of carbon (even low-rank coals) cannot be easily liquefied by hydrogenation by the current methods and an upper limit of 86 per cent is a safer limit.

Nearly the same amount of hydrogen is required for all coals being less than 10 per cent by weight. The yields vary widely because of the difference in coals, but in general they may be summarized as follows:

| | Per cent by weight |
|---|---|
| Total hydrogenated products | 48-90 |
| Gas product | 12-23 |
| Total liquid product | 36-67 |
| Losses to ash, unreacted coal, sulfides, ammonia, water, etc. | 52-10 |

The liquid product (boiling to 625° F.) consists of:

| | Per cent |
|---|---|
| Tar acids | 14-20 |
| Tar bases | 3-5 |
| Neutral oil | 75-83 |

The neutral oil contains only about 20 per cent of material in the boiling range of gasoline but it is felt that by another hydrogenation operation using the neutral oil as a charge stock, that a yield of 80 per cent of gasoline can be produced. According to this, the possible yield of gasoline by coal hydrogenation can be produced. According to this, the possible yield of gasoline by coal hydrogenation and further hydrogenation of the heavy oil products, would result in a final yield of 22 to 45 per cent by weight based on coal. It is true that coals could be selected which would yield over 40 per cent of finished oil, and the value of the tar acids and bases as chemical stocks, and the gas as a fuel, should not be overlooked.

The gasoline produced by hydrogenation is extremely rich in aromatic hydrocarbons (40-75 per cent), it contains 2 to 8 per cent of olefins, and the rest paraffin hydrocarbons. The percentages of sulfur, oxygen, and nitrogen are extremely low.

The following are references to work that has been conducted by the U. S. Bureau of Mines in recent years. The last reference (12) is an exceptionally complete and timely survey of all of the coal hydrogenation work of the Pittsburgh, Pa., station of the Bureau of Mines.

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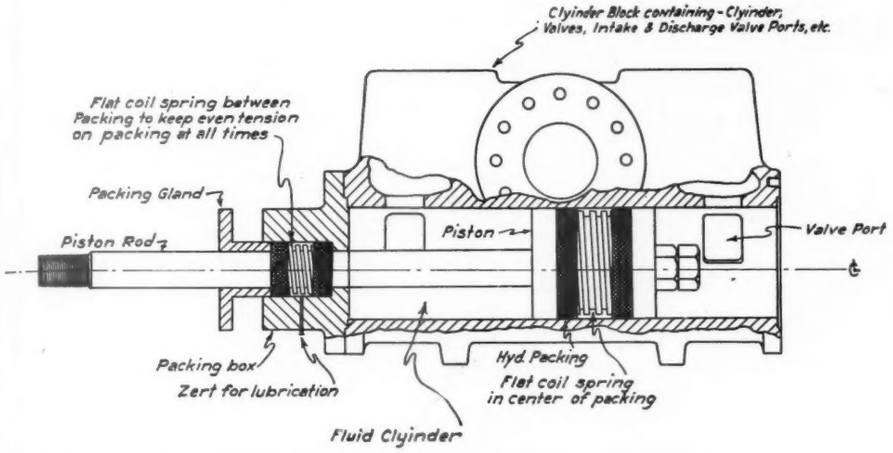
12. Storch, H. H., Hirst, L. L., Fisher, C. H., and Sprunk, G. C., "Hydrogenation and Liquefaction of Coal," Bureau of Mines Technical Paper 622, 1941.

# Operating Kinks Winning Prizes, N.G.A.A. Meeting

**Other Prize-Winning Kinks Appeared in May 1 issue, Page 28, and More Will Be Published in a Succeeding Issue**


Clyinder Block containing - Clyinder, Valves, Intake & Discharge Valve Ports, etc.
Flat coil spring between Packing to keep even tension on packing at all times
Packing Gland
Piston Rod
Piston
Valve Port
Packing box
Zert for lubrication
Hyd Packing
Flat coil spring in center of packing
Fluid Clyinder

## Coil-Spring Packing Saver Stops Leakage in Pumps

**FIRST PRIZE CLASS A**

**JAMES W. MAY,** *Pump Repairman*
**Phillips Petroleum Co., Oklahoma City, Okla.**

The kink submitted is a coil spring inserted in the center of any packing. Its object is to prevent the packing from overheating by maintaining a constant pressure on it. The spring makes allowance for expansion and contraction in operation. With normal adjustment packing will never score the piston rod or cause excessive wear in cylinder or liner.

The spring packing saver has been successfully used on both reciprocating and centrifugal pumps. On reciprocating pumps the spring is installed with both the piston and piston-rod packings. It is essential for successful operation, that the spring be compressed to a pressure equal to or greater than the total pressure on the face of the packing.

The spring has been very successful on a reciprocating pump handling isobutane. Before installing the spring on this pump considerable difficulty was experienced with the piston and piston rod scoring. One-third of the leaky packing was removed and the spring installed. The leaking stopped and the pump handled more fluid than it did before. Hydraulic packing was used on the piston, and soft packing on the rod.

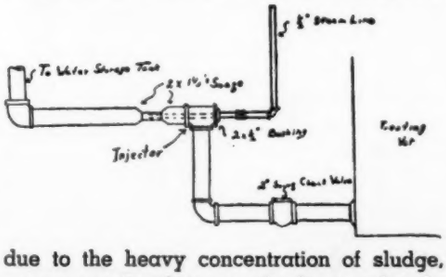
Leakage of a five-stage centrifugal pump was also eliminated by use of this spring. Four of the twelve rings were removed and the spring placed in the center of the packing. The eight old rings with the spring were sufficient to stop the leakage.

## Chemical Feed by Steam Injection

**SECOND PRIZE CLASS A**

**R. W. GORDON,** *Superintendent*
**Lone Star Gasoline Co., Borger, Tex.**

The generally accepted idea of dumping solid lime and soda ash into the water tank to be treated is that much of these chemicals will settle to the bottom of the tank without reacting with the hardening compounds in the water. Even though the water is agitated with air the large amount of sediments in the bottom becomes stirred up, and



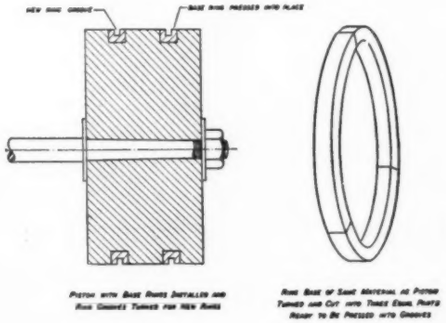

due to the heavy concentration of sludge, proper reaction between the lime and soda ash with the hardening compounds is prevented.

The general practice is to make a concentrated solution of lime and soda ash in a small tank, permitting the sludge to settle. This solution is then pumped into the water storage tank and agitated with air. However, it is difficult to keep the treating pump from leaking around the rods, so that it is usually an eye-sore at the plant. The method illustrated consists of jetting this solution into the water tank with a steam jet.

## Renewable Base for Compressor Piston Ring

**THIRD PRIZE CLASS A**

**FREY PILAND,** *Chief Engineer*
**Shell Oil Co., Inc., Denver City, Tex.**



The operating kink, a renewable base for compressor piston rings, has been in operation for some time and has proved to be very satisfactory. This idea may be employed when piston-ring grooves become worn or damaged by sand or ring breakage to such an extent that they must be enlarged abnormally for new piston-ring installation requiring new rings of excess width and weight which in many instances would not be practical. The renewable ring base provides a base for cutting new piston-ring grooves that will allow rings of the original size to be used.

First, it is necessary to prepare the piston for the ring base by turning out the ring grooves to give a true surface, with desired width and depth, depending on the size of ring to be installed. It is advisable to have

the ring base wide enough so that when the new piston-ring groove is cut there will be at least 5/16 in. of ring base on each side of the new groove and deep enough to allow ⅜ to ½ in. of stock left in the ring base at bottom after the new groove has been cut to proper depth.

Second, it is then necessary to turn ring base from casting so the inside diameter will be slightly larger than the diameter of piston at the bottom of ring-base groove, depending on the size of the piston and thickness of saw that is to be used to cut the ring into three equal parts. This is necessary to prevent a gap between the base segments after they have been pressed into the ring-base groove. The width of the ring base should be 0.0015 to 0.002 in. wider than the ring-base grooves so that once the ring base is in position it will not work loose.

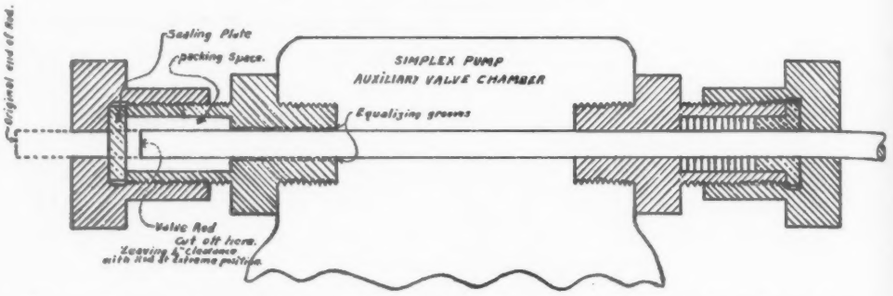
Third, the ring base is then cut into three equal parts and pressed into the grooves. The piston can now be placed into a lathe and ring grooves of original size can be cut from the rings to be installed.

The ring base should be of the same material as the piston, in order that the coefficient of expansion will be equal, therefore preventing base rings from finally becoming loose. The renewable ring base makes it possible to continue using the original piston and rering with rings of original size, thus permitting operation at a higher compressor efficiency with the old piston.

## Packing Eliminator for Pump-Valve Rod

**FOURTH PRIZE CLASS A**

L. H. DAVIES, *Assistant Superintendent*
Cities Service Oil Co., Wichita, Kans.

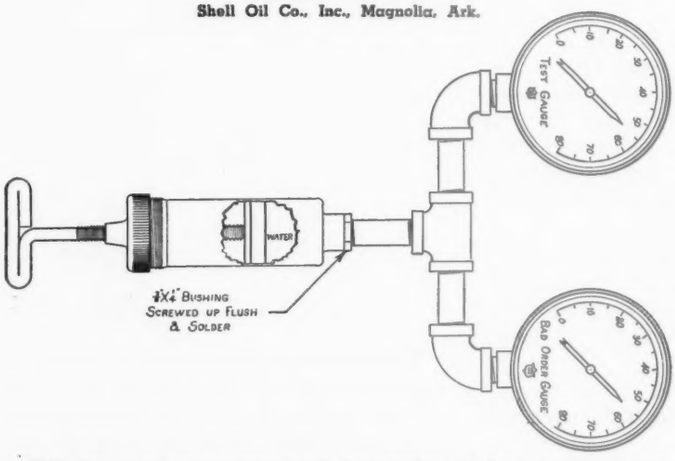



The auxiliary valve stem is cut off approximately ¼ in. inside the stuffing box, when the valve rod is in the extreme position at the end under consideration. The stuffing-box gland is discarded and a metal plate and gasket are placed inside the stuffing-box nut in such a way that the stuffing box is sealed tight when the nut is screwed on. Grooves are sawed in the guide end of the stuffing box to allow for equalization of pressure, in the steam chamber and in the stuffing box. In addition to the saving of packing and installation labor there is a saving of mess due to leakage of the packing.

## Pressure-Gage Tester

**THIRD PRIZE CLASS B**

H. D. TRENARY, *Plant Engineer*
Shell Oil Co., Inc., Magnolia, Ark.




This pressure-gage tester may be constructed from a grease gun, making use of the former grease container and piston as a pressuring device for the gage to be checked as well as the test gage. The device may be constructed by removing the grease fitting from the gun, replacing with a ⅜ by ¼-in. bushing and finishing with ¼-in. connections to an outlet each for the test gage and the gage under test.

The gage tester should be operated in the following manner: First, fill the system with oil or water with the plunger retarded; second, attach gages; third, adjust the test gage to the desired pressure by means of the thumb screw actuating the plunger.

The advantages of a gage tester of this type are: (1) It is light weight and can be easily carried to points where heavier and more stationary gage testers are not available. (2) It is simple and easily repaired on the job.

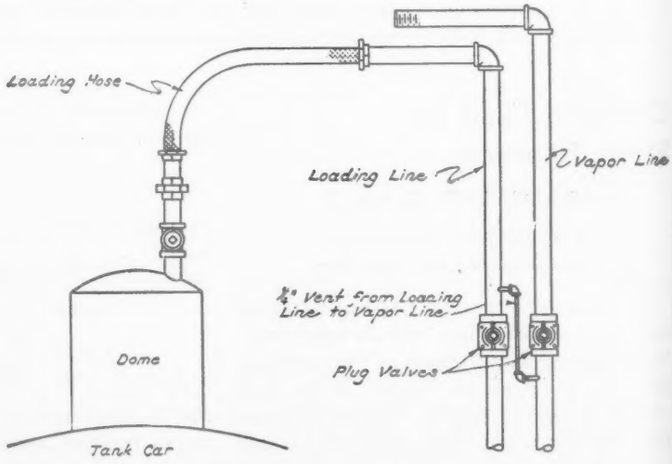
## Gasoline-Loading-Line Vent

**FOURTH PRIZE CLASS B**

GEORGE PATE, *Repairman*
Lone Star Gasoline Co., Eastland, Tex.

A new hazard in loading tank cars has been presented when the cars are loaded with the new pressure-loading method. By this method the tanks are loaded under about 15 lb. pressure and the vapors are not pulled back into the plant system. After the car has been loaded, this vapor and gasoline drain off, often saturating the loader, car, and rack with vapors and gasoline.

This hazard has been eliminated by installing a ¼-in. vent from the loading line above the plug valve to the vapor line below the plug valve. This permits the gasoline and vapors to drain back into the vapor line. Thus when this line is cracked back into the suction of the vapor machines, the gasoline either evaporates and is carried into the machines as a vapor or is trapped in the suction scrubbers as a liquid.



Tret-O-lite

East Ohio Gas Co.
Cleveland, Ohio

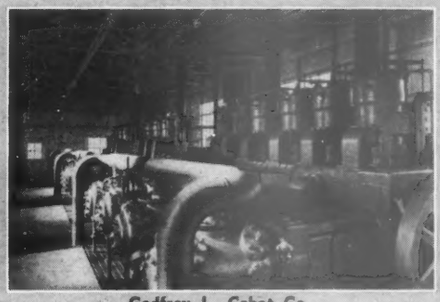
# 49,700 CLARK

## COMPRESSING

In a little less than 5 years on the market, CLARK "Angles" totaling 49,700 B. H. P. have been installed by natural gas companies as gas driven natural gas compressors. A grand total of 340,000 B.H.P. of these compressors are now in operation, a new world record for compressor sales.

Natural gas companies are using CLARK "Angles" primarily for gas boosting service in main pipe line stations and municipal plants — but they are also using them for many other purposes, such as their use for refrigeration in the new gas liquefaction plant of the East Ohio Gas Company.

The leadership of CLARK "Angles" has resulted from the important economies they have introduced: (1) Lower transportation and erection costs; (2) Smaller foundations and floor space; (3) One-third fuel saving, due to CLARK patented fuel injection; (4) Lower maintenance due to mechanical simplicity. You should investigate these savings. Our engineers will be glad to go into full detail.


Godfrey L. Cabot Co.
Genesee, Pa.

Panhandle Eastern P. L. Co.
Tuscola, Ill.

Gas Booster Installation
in Pittsburgh, Pa. District

CLARK BROS. CO., INC.—OLEAN, N.Y., U.S.A.
Export Offices: 30 Rockefeller Plaza, New York.
Domestic Sales Offices and Warehouses: Tulsa, Okla.; Houston, Texas; Chicago, Ill.; Boston, Mass. (131 Clarendon St.) West Coast Offices: Smith-Booth-Usher Co., Los Angeles, Cal. Foreign Offices: 72 Turnmill St., E. C. 1, London; 9 Str. General Poefas, Bucharest, Roumania.

CL

Canadian River Gas Co.
Dalhart, Texas

Memphis Natural Gas Co.
Wilmot, Ark.

# B.H.P. OF "ANGLES"

## NATURAL GAS

**Among the natural gas companies using CLARK "Angles" are:**

Belmont Quadrangle Drilling Corp.
Canadian River Gas Company
Carnegie Natural Gas Company
Colorado Interstate Gas Company
Columbian Carbon Company
Columbian Fuel Corporation
Consolidated Gas Utilities Corp.
Dominion Natural Gas Company
Eason Oil Company
East Ohio Gas Company
El Paso Natural Gas Company
Empire Gas & Fuel Company
Godfrey L. Cabot Company
Hanley & Bird
Interstate Natural Gas Company
Kentucky-W. Virginia Gas Co.
Manufacturers Gas Company
Manufacturers Light & Heat Co.
Memphis Natural Gas Company
Mississippi River Fuel Corp.
New Mexico Gas Company
Panhandle Eastern Pipe Line Co.
Penn York Gas Company
Union Gas Co. of Canada
United Fuel Gas Company
West Texas Gas Company

El Paso Natural Gas Co.
Jal, N. M.

Eason Oil Company
Crescent, Okla.

Memphis Natural Gas Co.
Monroe, La.

# ARK

**Affiliated Companies**
Dresser Manufacturing Company, Bradford, Pa.
Bryant Heater Company, Cleveland, Ohio
Pacific Pump Works, Huntington Park, Calif.
Van der Horst Corporation of America.
Perous Chrome Hardening for engine parts

# Intermittent Injection of Air Aided by Electric Clocks

By A. C. MacINTYRE

AN electric-clock device, which automatically controls the flow of air injected into input wells, is working satisfactorily in a highly successful intermittent repressuring development in the Oil City-Titusville district of the Pennsylvania fields. Important as is the increased recovery, Pennsylvania operators are interested in another phase of the operation, the fact that slugging is proving successful in areas where channeling and bypassing are big problems.

Various devices to control intermittent application are being used in this field. On some operations the control is manual with a lease worker making a tour of the lease and opening and closing the valves at certain times. In another case an alarm clock has been rigged up to control the flow. In another case a pressure valve closes the valve when a certain pressure is reached and opens it at another pressure.

The electric-clock device is being used on properties of the National Petroleum Co. in the Grand Valley section of southern Warren County. It is in charge of C. C. Hogg, vice president of the company, who has been active in secondary-recovery operations for a number of years.

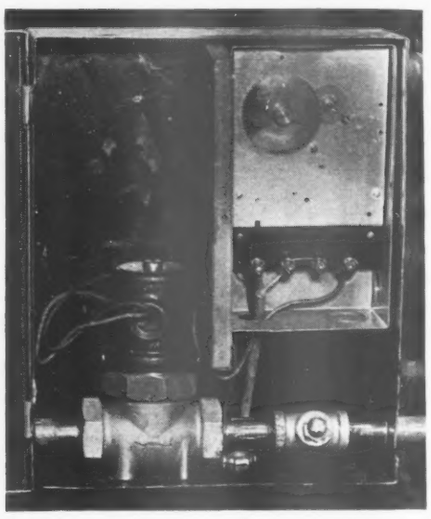
The trend toward intermittent application of air was brought about largely by conditions in that area. After the early repressuring it was found desirable to use more input wells and fewer producing oil wells. Gradually the available compressor facilities became overloaded. It was also found that wells in one section of the lease might require a very high pressure while on the other side the necessary injection pressure would be much lower. In the interest of efficiency the wells in the lower-pressure area were served by the plant during a portion of the daytime, or the night time, while the wells in the high-pressure area were served for remainder of the 24-hour period.

When that program was instituted it was found that the production was greatly increased and more definite study resulted in arranging the schedule so that certain wells received the pressure for 5 hours while others received the injection for 8 hours and high-pressure wells 16 hours.

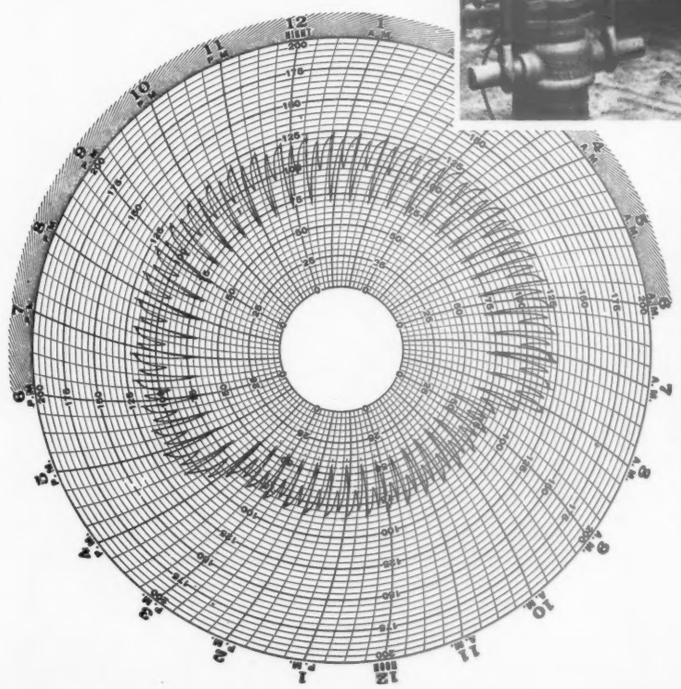
Results of this program of operation after 4 years' experience indicates an ultimate secondary recovery in excess of 3,000 bbl. per acre. Production on similar or even better property, where it was possible to use a continuous repressuring schedule, has resulted in only 2,400 bbl. per acre. The increased efficiency of the intermittent schedule as demonstrated by this rather extensive experiment is at least 25 per cent over the continuous repressuring. The acreage affected by these tests are approximately 40 acres each. They have been systematically developed.

In order to determine the optimum intermitting schedule, the company purchased a number of synchronous clocks which operate on a 110-volt, 60-cycle current, throwing a switch either at 30-minute or 1-hour intervals. The clocks were arranged to open a solenoid valve and could be so adjusted that the valve closed at the will of the operator.

After various "on" periods were tried, a schedule of 8 minutes "on" and 22 minutes "off" was adopted. The intake pressure used allowed 45,000 cu. ft. of air to be admitted to the sand each 24 hours. In 62 weeks of operation the production from wells surrounding this arrangement amounted to 6,730 bbl. of crude. This compared with 1,560 bbl. of crude for 62 weeks under continuous repressuring, or a gain in production by the intermittent repressuring of about 432 per cent.



*View of mechanism of the electric-clock device*



*Above: Details of the clock attached to the well. The clock is enclosed in a metal box to protect it from the weather. Left: This is the plant recording chart showing the high-pressure period from 4 p.m. to 8 a.m. and the low-pressure period from another section of the lease from 8 a.m. to 4 p.m. The rise and fall of the pressure, resulting from the action of the electric-clock device throughout period can be traced*

It is noted that with regular injection a pressure of only 20 lb. was required, while a pressure of 125 lb. was used with the intermittent injection.

It was not necessary to attach the electric clock to all the wells to obtain results. All were affected by the rise and fall in pressure as the valve was opened and closed by the electric clock.

The theory behind the experiment is that the Venango third sand has a very extreme range of permeability. Probably the oil strata being worked at 20 lb. was not more than 4 or 5 ft. thick out of a total of 32 ft. of exposed section. The injection of air in intermittent slugs caused a Jamin action in the more permeable strata of the sand and thus permitted injected air to be introduced into the less permeable area. These less-permeable strata have a higher oil content and thus the production was increased.

# Mobile Laboratory for Studying Condensate Recovery Problems

By H. M. NELLY, JR., and M. BENEDICT
The M. W. Kellogg Co.

**In evaluating the economics of a condensate-recovery project, a knowledge of the characteristics of the material to be produced is essential. This problem may be solved by use of mobile laboratory equipment. The unit simulates the operations of a commercial-size installation and can be moved to a location where it operates on the feed for the proposed recycling plant.**

***Above—Exterior of truck equipped to process gas from gas-condensate wells under a well-head pressure up to 6,000 lb. per sq. in. used for test purposes only although it performs all plant functions. Right—Control compartment for regulating and measuring processing temperatures, pressures and flow rates***

THE trend towards operation of condensate-recovery plants at progressively higher pressures above 1,500 lb. per sq. in. has introduced a number of new chemical-engineering design problems. Solution of these problems in the laboratory is difficult, and their analysis by calculation based on available physical data is uncertain. A suitable approach to these problems is the use of equipment which simulates the operation of a commercial-sized installation and which can be moved to a location where it may be operated on the feed for the proposed commercial unit. This article describes such equipment and presents typical results obtained from its use in the Gulf Coast area.

The design of any high-pressure recovery process is primarily dependent upon the use of vaporization equilibrium constants. The amount of lean oil required to effect a desired recovery of condensate and butane, the amount of lean-oil loss in the dry residual gas leaving the absorber, and the quantity of low-pressure gas from the flashing system together with the loss of desirable components in this gas are directly related to these equilibrium constants. At high pressure the constants for the hydrocarbons become increasingly sensitive to the particular composition of the feed and the type of process employed. Further, the higher the pressure the more difficult it is to predict these constants.

In evaluating the economics of a condensate-recovery project, a knowledge of the characteristics of the material to be produced, especially the gasoline, is essential. These characteristics, as determined on liquid taken from a field separator, will differ from those which would be produced in a commercial plant because of the improved recovery of the more volatile constituents in the latter. This applies not only to the boiling range of the gasoline but also to its octane ratings.

When the type of equipment described in this article is run on the feed for the commercial unit, utilizing the same type of process at the same temperature and pressure, the results will be directly comparable with those which would be obtained in the commercial unit, thus eliminating all uncertainties in equilibrium constants. Furthermore, the products obtained will have the same characteristics as those which will be produced by the commercial installation.

## Description of Equipment

The mobile condensate-recovery unit is illustrated in the photographs on these pages. The diagrammatic flow through the unit is shown in the accompanying diagram. The unit is a complete recovery plant mounted on a truck, which can be driven to the point where the high-pressure condensate stream to be studied is available. It has been so designed that it may be operated in any one of the following three conventional types of recovery processes:

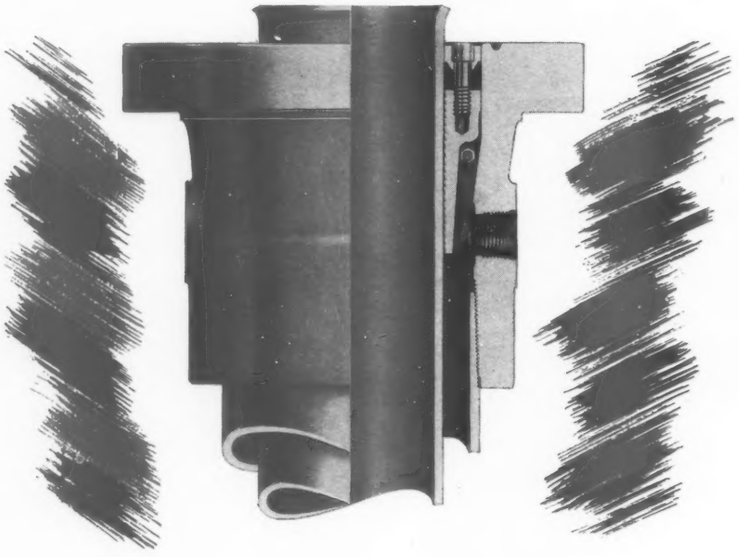
1. Atmospheric-temperature absorption.
2. Low-temperature absorption.
3. Low-temperature separation.

The unit can be operated over the following range of variables: Well-head pressure, up to 6,000 lb. per sq. in.; primary tower pressure, up to 5,000 lb. per sq. in.; primary tower temperature, —10° to +120° F.; feed rate, 500 to 1,200 standard cubic feet per hour; lean-oil rate, 0 to 5 gal. per hour.

The unit proper, that is, the towers, piping, valves, and meters, are located in the rear compartment of the truck body. Forward of these is the control compartment in which are mounted instruments for the measurement and automatic control of pressures, temperatures, liquid levels, and rates of flow. In the front compartment is located the equipment for providing utilities. This equipment consists of an air-cooled gasoline

# CAMERON CASING HEAD THAT'S *Tailor-Made*

## FOR HARD-TO-WELD GRADE N-80 CASING



Numerous operators are now using the Cameron Type "W" Casing Head assembly in conjunction with Grade N-80 casing which, because of its high carbon content, makes field welding impractical.

As illustrated in the accompanying cross-section drawing, this Casing Head features a slip type hanger and a neoprene-asbestos seal of the space between casing strings. Seal is accomplished by simply tightening socket head cap screws (see photographs at left) which screw directly into the top of the slips. Note that, unlike some casing heads of this general type, there are no exposed threads on the inside diameter of the casing head to be damaged by the drilling tools. The bolted type packing gland permits higher compression in the packing than is possible with a screwed type gland.

In high pressure areas where a pre-tested and repackable seal of the space between casing strings is desired, the Cameron Type "WM" Testing Flange is recommended for use with the Cameron Type "W" Casing Head assembly. This Testing Flange employs a repackable plastic packing seal which permits the application of hydraulic test pressure to the neoprene-asbestos seal.

Complete details on all types of Cameron Casing Heads and the new Cameron Casing Cutter will gladly be forwarded to interested operators on request.

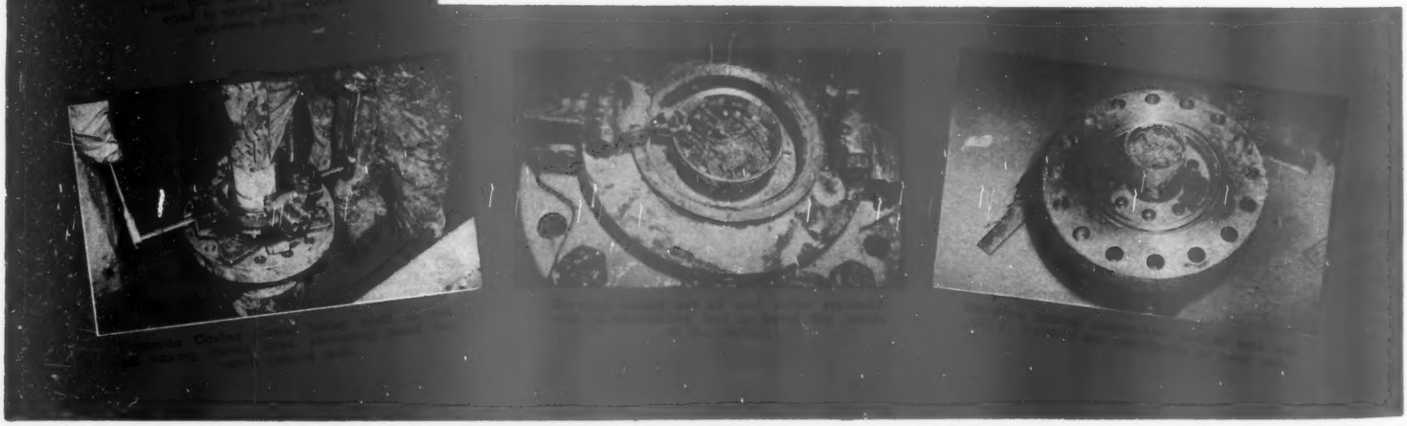
## CAMERON IRON WORKS, INC.

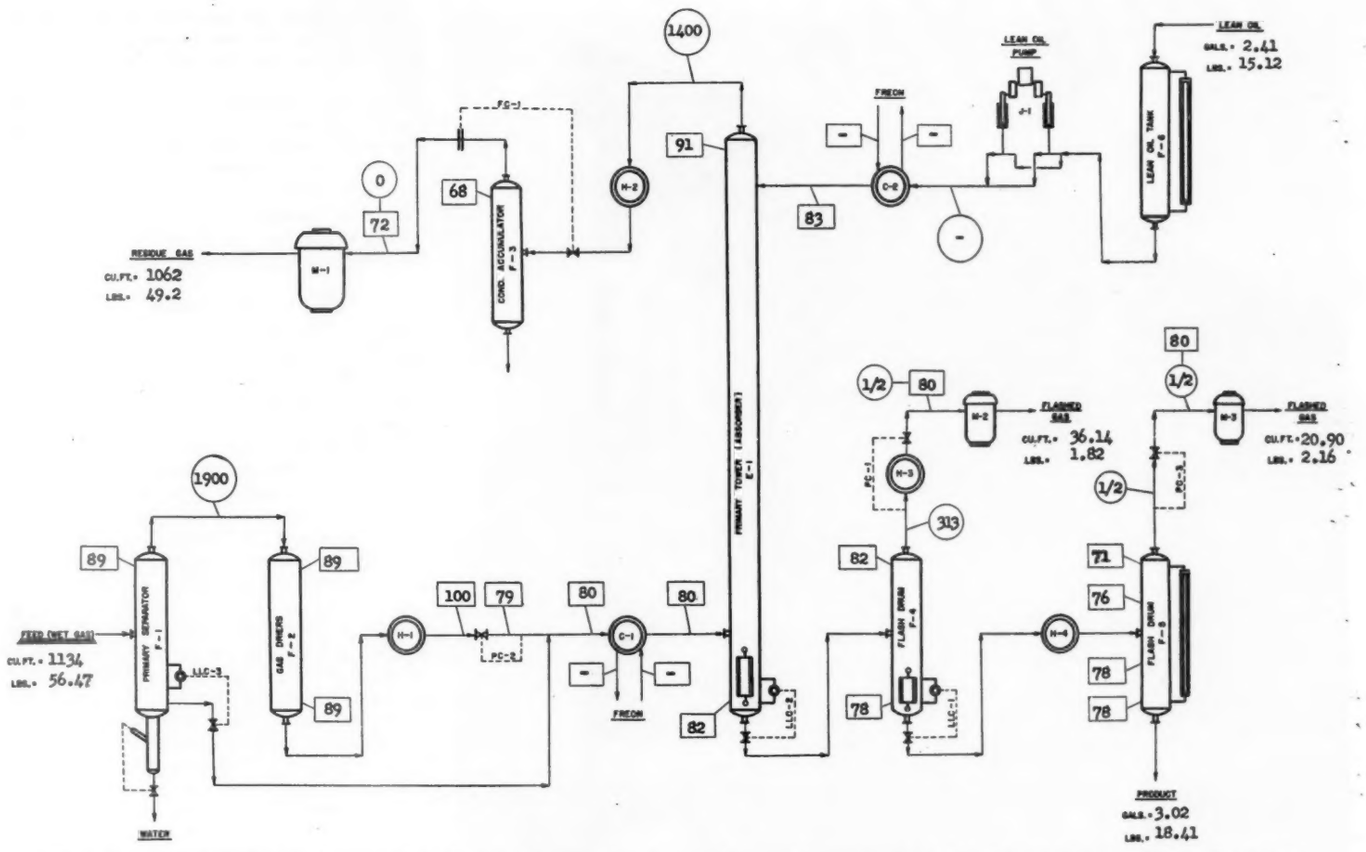
711 MILBY ST., HOUSTON, TEXAS

*Export:* 74 Trinity Place, New York, N. Y.

*California Distributor:* The Howard Supply Co., Los Angeles

*Oklahoma Representative:* Paul Edkin, Tulsa






*Flow chart and test results based on a typical 1-hour run. Pressure data expressed in pounds per square inch and temperatures in degrees Fahrenheit*

engine, which is the prime mover for the unit, generator, lean-oil pump, air compressor, and refrigerating apparatus. It should be noted that the unit is entirely self-contained and requires no external utilities.

The control of the operation of the unit has been made as nearly automatic as possible. This results in even operation and reduces the operating personnel to a minimum.

Referring to the flow diagram the feed enters the unit at the primary separator *F*-1, where a separation is made between water, hydrocarbon liquid, and hydrocarbon vapors. The gas from the top of *F*-1 is dried by contact with an activated gel in the drier *F*-2. It then passes through an electrically heated exchanger *H*-1, pressure control valve *PC*-2, and cooler *C*-1, by means of which its pressure and temperature are brought to the conditions desired for the principal separation.

The bottom of *F*-1 is provided with a leg equipped with an electrically operated water-level indicator and discharge valve. The hydrocarbon liquid from *F*-1 flows through the liquid-level controller *LLC*-3 and joins the gas stream after *PC*-2.

The stream leaving the cooler *C*-1 enters near the bottom of the primary tower *E*-1, where it is separated into liquid and vapor. In absorption-type operations, lean oil is fed from the calibrated tank *F*-6 by the pump *J*-1 through the cooler *C*-2 to the top of *E*-1, where it flows countercurrent to the hydrocarbon gases. The gas leaving the top of *E*-1 flows through the electrically heated exchanger *H*-2 and the flow-control valve *FC*-1 to the retrograde condensate accumulator *F*-3. This vessel, operated at substantially atmospheric pressure, collects lean oil or condensate which may have been precipitated from the gas stream leaving *E*-1 upon pressure reduction. The gas leaving *F*-3 flows through an orifice actuating the flow-control valve *FC*-1, establishing the throughput for the entire unit. The dry meter *M*-1 measures the volume of this gas at atmospheric pressure.

The liquid from the bottom of the primary tower *E*-1 flows through the liquid-level controller *LLC*-2, where it is throttled into the flash drum *F*-4. Here the flashed vapor is separated from the liquid at a pressure intermediate between atmospheric and that prevailing in *E*-1. The gas from the top of *F*-4 is discharged through an electrically heated exchanger *H*-3 and a pressure controller *PC*-1, and is then measured by dry meter *M*-2.

The liquid from the bottom of *F*-4 passes through the liquid-level controller *LLC*-1 and the electrically heated exchanger *H*-4, being discharged into the low-pressure flash drum *F*-5. Here, a final separation is made between gas and liquid. The gas is discharged through the pressure controller *PC*-3 and is measured in the dry meter *M*-3. The liquid is accumulated and measured in *F*-5.

Refrigeration is effected by an air-cooled vapor-compression freon refrigerating system.

The foregoing describes the most complete utilization of the unit. When operating without refrigeration, the coolers may be bypassed, and when operating without absorption, no lean oil is used. If desired, the intermediate flash drum *F*-4 may also be bypassed. Connections have been provided for concurrent absorption operation, wherein lean oil from the pump *J*-1 is charged directly into the total feed before the cooler *C*-1.

## High-Pressure Vessels

The high-pressure vessels are made of alloy steel, 4-in. o.d. by 2-in. i.d. They are connected by ½-in. double extra-heavy pipe with appropriate fittings. All joints except a few essential unions are brazed or welded. All high-pressure piping is designed for 6,000 lb. per sq. in. working pressure.

The bottom section of the primary tower *E*-1 is a flash chamber 21 in. high. Above this is a 39-in. absorption section, packed with $\frac{1}{16}$-in. i.d., 1⅛ turn stainless-steel helices. Lean oil is in-

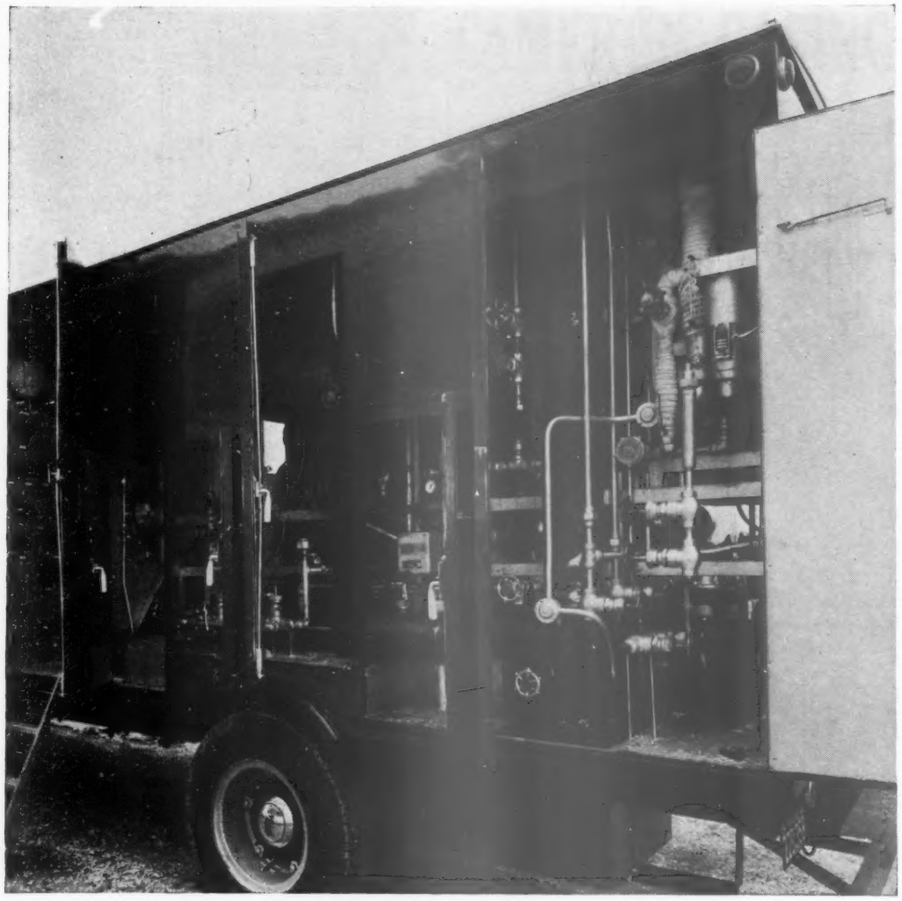
**TABLE 1—OPERATING CONDITIONS**

| Test No. | A | B |
|---|---|---|
| Type operation— | Atmos. temp. absorption | Low-temp. absorption |
| Absorber pressure (lb./sq. in.) | 1,400 | 1,400 |
| Absorber temperature (°F.) | 82 | 37 |
| Feed (S.C.F./hour) | 1,134 | 1,180 |
| Absorber dry gas (S.C.F./hour) | 1,062 | 1,056 |
| Gas shrinkage (per cent on feed) | 6.35 | 10.52 |
| Lean oil: | | |
| Gallons per hour | 2.41 | 2.35 |
| Gallons per 1,000 S.C.F. of feed | 2.13 | 2.00 |
| Distribution of pentane plus (gals. per 1,000 S.C.F. of feed): | | |
| Feed | 0.645 | 0.641 |
| Absorber dry gas | 0.170 | 0.051 |
| Absorber rich oil | 0.475 | 0.590 |
| Recovery in absorber (per cent of component in feed): | | |
| Methane | 3.34 | 4.64 |
| Ethane | 14.14 | 23.10 |
| Propane | 27.70 | 50.50 |
| Butane | 51.70 | 80.20 |
| Pentane plus* | 73.90 | 93.10 |

*Lean-oil loss has been taken into account in this value, therefore, it represents the net recovery of pentanes and heavier.

**TABLE 2—FEED CHARACTERISTICS**

| Test No.— | A | B |
|---|---|---|
| Pressure (lb./sq. in.) | 1,900 | 1,900 |
| Temperature (°F.) | 110 | 110 |
| Composition (mol per cent): | | |
| Methane | 91.59 | 92.02 |
| Ethane | 3.18 | 3.20 |
| Propane | 2.34 | 2.03 |
| Butane | 1.39 | 1.26 |
| Pentane plus | 1.50 | 1.49 |
| Total | 100.00 | 100.00 |
| Molecular weight | 18.91 | 18.81 |
| Gals./1,000 of pentane plus | 0.645 | 0.641 |



*Processing unit including towers, piping, valves and meters*

troduced directly above this section. At the top of the tower is a mist-extracting section to prevent mechanical carryover of liquid. This section is packed with a 12-in. layer of metal helices. Similar mist-extracting sections are provided in all vessels where liquid and gas are separated. The primary tower *E*-1 and the flash drum *F*-4 are fitted with special, reflex-type sight glasses made of transparent lucite.

Provision is made for measuring the pressure and temperature of the various streams at the points indicated in the diagram. Samples may be taken at the top and bottom of all towers and drums. In this way, a complete study may be made of the processes taking place in each of the vessels, and component balances may be made over several sections of the unit to check the reliability of the data.

## Operating Data

To illustrate the type of information which can be obtained from the operation of the unit, the result of two typical test runs are presented. Both tests were absorption runs made on the same feed under identical operating conditions with the exception of the temperature of the absorber. The operating conditions and principal results of these runs are given in outline in Table 1.

**TABLE 3—CHARACTERISTICS OF LEAN OIL**

| | |
|---|---|
| Gravity, °A.P.I. | 56.2 |
| A.S.T.M. distillation: | |
| I.B.P. | 211 |
| 5 per cent | 231 |
| 10 per cent | 236 |
| 20 per cent | 243 |
| 30 per cent | 250 |
| 40 per cent | 260 |
| 50 per cent | 271 |
| 60 per cent | 287 |
| 70 per cent | 308 |
| 80 per cent | 340 |
| 90 per cent | 401 |
| 95 per cent | 462 |
| End point | 493 |
| Per cent recovery | 97.0 |
| Per cent residue | 2.0 |
| Per cent loss | 1.0 |

**TABLE 4—OPERATION OF INTERMEDIATE FLASH DRUM (F-4)**

| Test No.— | | A | |
|---|---|---|---|
| Pressure (lb./sq. in.) | | 313 | |
| Temperature (°F.) | | 78 | |
| | Output | | Input |
| Component balance (lb./hr.): | *F*-4 gas | *F*-4 liquid | Total | *E*-1 liquid |
| Methane | 1.34 | 0.27 | 1.61 | 1.46 |
| Ethane | 0.17 | 0.23 | 0.40 | 0.40 |
| Propane | 0.15 | 0.73 | 0.88 | 0.85 |
| Butane | 0.11 | 1.20 | 1.31 | 1.27 |
| Pentane plus* | 0.05 | 18.15 | 18.20 | 18.41 |
| Total | 1.82 | 20.57 | 22.39 | 22.39 |

*Includes lean oil.

**TABLE 5—OPERATION OF LOW-PRESSURE FLASH DRUM (F-5)**

| Test No.— | | A | |
|---|---|---|---|
| Pressure (lb./sq. in.) | | 0.5 | |
| Temperature (°F.) | | 71 | |
| | Output | | Input |
| Component balance (lb./hr.): | *F*-5 gas | *F*-5 liquid | Total | *F*-4 liquid |
| Methane | 0.35 | 0 | 0.35 | 0.27 |
| Ethane | 0.27 | 0 | 0.27 | 0.23 |
| Propane | 0.60 | 0.18 | 0.78 | 0.73 |
| Butane | 0.71 | 0.69 | 1.40 | 1.20 |
| Pentane plus* | 0.23 | 17.54 | 17.77 | 18.14 |
| Total | 2.16 | 18.41 | 20.57 | 20.57 |

*Includes lean oil.

Table 2 gives the pressure, temperature, and composition of the feed entering the unit. The composition of the feed was evaluated by compositing the dry absorber gas with the absorber rich oil and deducting the lean oil. It is interesting to note the close agreement in the composition of the feed as determined in this way.

Temperature, pressure, and quantity details for run *A* are given on the flow sheet. Detailed component balances on the intermediate flash drum *F*-4 and the low-pressure flash drum *F*-5 for this run are presented in Tables 4 and 5.

## Discussion

Referring to Table 1, examination of the distribution of the pentane plus fraction and the percentage recovery of the various components shows the marked effect of lowering the absorber temperature. In lowering this temperature from 82° F. to 37° F., while maintaining the pressure and lean-oil rate substantially constant, the amount of pentane plus in the absorber dry gas is decreased from 0.17 to 0.05 gal. per 1,000 cu. ft. Expressed in another way, lowering the absorber temperature raises the recovery of pentane plus from 73.9 per cent to 93.1 per cent.

The values reported in Table 1 for the percentage of pentanes plus have taken into account the lean-oil loss from the top of the absorber and are therefore net values. The percentage of this material entering with the feed which is retained by the absorber is higher than that reported, but in arriving at the net recovery the lean-oil loss has been deducted. This reasoning does not apply to hydrocarbons lighter than pentane, since they are not present in the lean oil. It should be pointed out that the rather high loss of pentane plus is to a great extent attributed to the low initial boiling point of the lean oil, inspections of which are given in Table 3.

Table 1 also shows that lowering the absorber temperature not only increases the recovery of the more desirable constituents but also that of methane and ethane. This results in a greater gas shrinkage at the lower temperature and a corresponding increase in the amount of low-pressure flashed gas.

The accuracy of the results obtained from the unit depend not only upon its operation but also upon the ability to collect a representative sample, to transport it without leakage or contamination to the laboratory, and to analyze it correctly. There are certain checks which can and should be made before the data are accepted. One of these has already been given in the comparison of the component analysis of the feed for Runs A and B in Table 2. Although it is not possible to make material balances around the various sections of the unit, nevertheless, partial checks of this nature are afforded by component balances around the flash drums *F*-4 and *F*-5. These component balances depend upon the determined composition of all streams entering and leaving the drums, the measured output quantities, and the computed input quantities. Such component balances for Run A are shown in Table 4 for the intermediate flash drum *F*-4, and in Table 5 for the low-pressure flash drum *F*-5. Comparison of the input and total output quantities of the individual components shows the data to be reliable.

The operation of the equipment will solve many current problems and its continued use should provide a background of physical data dealing with high-pressure hydrocarbon systems which will be of assistance in making present recovery processes more efficient and in developing new processes. It is highly possible that this physical data may also be of benefit in helping to solve related production problems.

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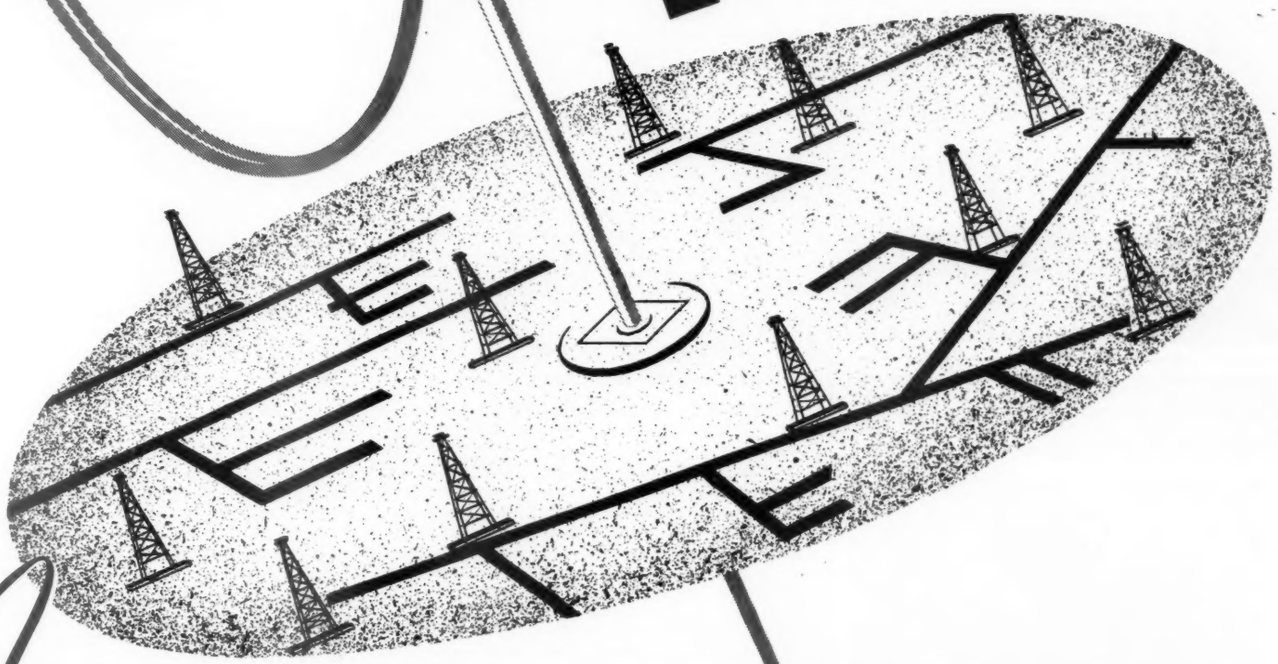

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# Pipe-Line Activity

## Jones & Brooks Start Work at Big Sioux River Crossing

Construction operations at the crossing of the Big Sioux River at Sioux Falls, S. D., were commenced early this week by Jones & Brooks, Inc. This firm is laying 82 miles of 6-in. gasoline line for Standard Oil Co. (Indiana) between Sioux City, Iowa, and Sioux Falls, S. D. Main-line construction was under way in the middle of this week. This contracting organization has established headquarters at Canton, S. D. Operations are directed by O. T. Mapes, superintendent on the job.

## East Texas-Bayway, N. J., Shipments By Pipe Line Are Contemplated

Plans are being considered by Standard Oil Co. of New Jersey for the movement of 20,000 bbl. of crude oil per day by pipe line from East Texas to the company's refineries in the Bayway, N. J., area. Shipments would be started by Humble Pipe Line Co. which would deliver to Standard Oil Co. of Louisiana, pipe-line department; from De Queen, Ark., oil would go to Oklahoma Pipe Line Co. for shipment to Glenn-pool, Okla., where it would be transferred to Illinois Pipe Line Co. at Wood River, Ill. After leaving the Illinois system, oil would move through Northern Group Pipe Lines. For several years, Standard of New Jersey lines have transported about 6,000 bbl. per day from the Mid-Continent area to Sarnia, Ont. Last year this organization began shipments of Venezuela crude through a series of pipe lines from Marcus Hook, Pa., to Sarnia.

## R.F.C. Dismisses Application For Hugoton-Minnesota Line

WASHINGTON, D. C.—The Federal Power Commission announced that the Kansas Pipe Line & Gas Co. application for authority to construct a pipe line from the Hugoton gas field in Kansas to the Mesabi iron range in Minnesota had been dismissed without prejudice because the company failed to prosecute its proposal. The company's application for the pipe line, to serve distributors and consumers in Kansas, Nebraska, South Dakota, North Dakota, and Minnesota, was filed in 1938, and cost of the proposed extension was estimated by the applicant at $14,550,000.

The Reconstruction Finance Corporation had agreed to loan half the amount required for construction. Those familiar with the plans for this line have said that, owing to difficulties arising under conditions of emergency in this country, another application was made for a larger loan from the federal Government. Since the line was to furnish gas for fuel in beneficiation processes used for preparing low-grade ores for shipment in a concentrated form, it was hoped that the Government would regard the construction of the line as a project making an important contribution to the national-defense program.

Special attention was given to the possibilities which might be realized in using natural gas in connection with the production of manganese ores at the Cayuna range in Minnesota. After the application for a larger loan from R.F.C. was denied, it has been admitted by some of those concerned with the project that it would not be possible to build the line under present conditions. However, belief was expressed that it would be considered as a post-war project.

## Lima-Pennsylvania Gas Line Is Operated by Two Companies

PITTSBURGH, Pa.—In connection with the plans which are being considered for increasing pipe-line facilities serving eastern states, attention has been directed to the status of an 8-in. line between Lima, Ohio, and western Pennsylvania. This line was acquired several years ago from Illinois Pipe Line Co. by the Columbia Gas & Electric system. At present the line is used as a natural-gas line.

The western section between Lima and the Wayne-Stark County line between Wooster and Massillon, Ohio, is owned and operated as a necessary link in the transmission system of Ohio Fuel Gas Co. The eastern section of the line is owned and operated by Natural Gas Co. of West Virginia.

Both of these gas companies are in the Columbia Gas & Electric system. Illinois Pipe Line Co. retains and continues to operate an 8-in. oil line laying parallel to this 8-in. line which is now used for transmitting gas.

## Reserve Gas Pipe Line Seeks F.P.C. Decision

Following the order of Federal Power Commission in the Milwaukee natural-gas case, Reserve Gas Pipe Line Co. is asking the commission to issue a similar nonjurisdiction order in regard to the Reserve's proposed project to lay a gas line from the Corpus Christi, Tex., area to New York City. In the Milwaukee case, the commission came to the conclusion that it did not have authority to regulate the construction of gas pipe lines planned for serving areas which are not supplied with natural gas. Applications were dismissed with the statement that F.P.C. is without authority to regulate until a pipe line had been laid to the area in question. Applications had been made to lay lines to Milwaukee by Independent Natural Gas Co. (Phillips) and Western Natural Gas Co. (El Paso). Although Natural Gas Pipeline Co. of America did not file an application, it presented testimony at hearings and was regarded by the commission as being in the position of an applicant.

## United Gas Pipe Line Leads in Automobile Safety Contest

HOUSTON, Tex.—In the eighth month of the National Fleet Safety contest automobile fleets in the San Antonio and southwest Louisiana districts of United Gas Pipe Line Co. are leading the nation in their respective divisions. The San Antonio division is top fleet in the small-fleet section of the petroleum division. The southwest Louisiana district is leading Group 4 of the passenger-car division. In the petroleum division, 6,341 cars are competing from a total of 64 fleets and in the passenger-car division 113 fleets with a total of 6,876 cars make the competition stiff.

The average accident rate prevailing for all fleets during the first 8 months of the contest is low. In the passenger-car division there have been only 1.02 accidents per 100,000 miles and in the petroleum division, 2.41 accidents over the same distance.

## Pennsylvania Approves Gas Pipe-Line Lease

HARRISBURG, Pa.—The Public Utility Commission of Pennsylvania has approved an extension of a pipe-line lease by the Peoples Natural Gas Co. of Pittsburgh to the New York State Natural Gas Corp., an affiliate. The line runs through Clarion, Jefferson, Elk and McKean counties from Limestone Township in Clarion County, to Hebron Township, Potter County.

Dissenting opinions were filed by Commissioners Richard J. Beamish and Thomas C. Buchanan. Mr. Beamish declared the extension of lease was "contrary to the interests of the people of Pennsylvania and particularly against the interests of the anthracite and bituminous areas . . ."

Mr. Buchanan said he saw no objection to the extension of the lease, but did object "to the continued sale of natural gas by Peoples to New York through this pipe line at a price which very apparently neither the company nor the commission has been able to justify as just or reasonable."

## Southern Natural Line Is Under Construction

SHREVEPORT, La.—Construction has begun on the 135-mile, 16-in. gas pipe line of the Southern Natural Gas Co. of Birmingham, Ala. The line originates at

# Pipe-Line Personalities . . . E. R. Cunningham

E. R. CUNNINGHAM, general superintendent of main pipe lines for United Gas Pipe Line Co., has had a thorough grounding in pipeline operations. He was born in Italy, Tex., and was educated at Texas A. & M. College.

His first experience in the pipe-line industry was in 1923, as a utility man and dispatcher. Three years later he joined the Moody-Seagraves interests and added meter and instrument work to his experience. In 1928 he was made assistant superintendent of operations for Houston Gulf Gas Co. and the Dixie Gas Co., continuing in that capacity until 1930, when he joined the United Gas Public Service Co., as assistant superintendent of pipe lines.

In June 1934, he was named superintendent of main pipe lines. When headquarters of United Gas Pipe Line Co. were moved to Shreveport, La., Mr. Cunningham transferred there from Houston, where most of his pipe-line experience had been gained. In supervising main lines he covers nearly all the United Gas system, extending from Mexico to Florida.

In maintaining supervision over the company's 5,800 miles of pipe lines, ranging up to 24 in. in diameter, Mr. Cunningham's travels are extensive. The system extends into parts of Southwest Texas, West Texas and North Texas in addition to the districts of concentrated service in Louisiana, the Gulf Coast sections of Texas and Louisiana, Central and southern Mississippi and southern Alabama.

the Joaquin field of De Soto Parish, Louisiana, and Shelby County, Texas, where Southern Production Co., Inc., a subsidiary company, has developed new gas reserves. Gas will be supplied to the company's main trunk line at Perryville, La., north of the Monroe field. The B. & M. Construction Co. of Oklahoma City has contract for the line. Subcontractors are C. S. Seales Co. for right-of-way, and H. C. Price Co. for welding. Construction headquarters during laying of the line will be maintained in Ruston, La., near the midway point of the new line.

## General American Acquires Bell's Texas Pipe Lines

Bell Oil & Gas Co., of Tulsa, announces that it has sold all of its stock and interest in Bell General Pipe Line Co., of Dallas, Tex., and of Bell General Transit Co., of Texas, to General American Oil Co., of Dallas, Tex. Bell General Pipe Line is a gathering system operating exclusively in East Texas area, which gathered and sold East Texas crude to various pipe-line companies. Bell General Transit is a trunk line carrier, transporting oil from Overton, Tex., to Bullard, Tex., on movement to the coast.

The sale did not include any of the production of Bell in East Texas, or any of its other operating pipe lines in Texas or elsewhere, but was confined to the interests of the Bell Oil & Gas Co. in the two companies mentioned above.

## Sinclair Lays Line In East Texas

MARSHALL, Tex.—Sinclair Refining Co. pipe-line department has completed laying a new line from the Long Lake field in Anderson County, Texas, to the newly discovered Tex Harvey oil field to handle production from the discovery, the Tex Harvey 1 Cartmel, Ewing Survey, which produced from 5,387 ft. in the Woodbine.

## Midwestern Is Completing Work at Wilmington, Ill.

Approximately 90 per cent of the work has been completed in taking up 63 miles of pipe in sizes including 8-in., 12-in., and 14-in. near Wilmington, Ill., for Tri-State Pipe Co. by Midwestern Engineering & Construction Co. This contracting firm has recently ocmpleted 5 miles of 2-in. for Illinois Natural Gas Co. and is starting to lay 15 miles of 3-in. for this gas company near Lincoln, Ill. In the middle of the month, Midwestern will commence construction of 69 miles of 6-in. gasoline line for Socony-Vacuum Oil Co., Inc., in the vicinity of Topeka, Kans., where it is expected that field headquarters will be established.

## Standard of La. Considers Magnolia-McKamie Line

Standard Oil Co. of Louisiana is considering the possibility of laying a pipe line from its Magnolia, Ark., pumping station to the McKamie gas-distillate field in Lafayette County, Ark., via the Dorcheat field, Columbia County. At present Standard is buying the distillate from the McKamie field, which has five wells producing from the Smackover lime at 9,200 ft. and is trucking the production. Should developments in that field warrant a pipe line it would be laid via Dorcheat from Magnolia.

## O. E. Dempsey Establishes Field Office in Iowa

Preparatory to laying 101 miles of 26-in. pipe for Natural Gas Pipeline Co. of America, O. E. Dempsey Construction Co. is establishing a field office at Crescent, Iowa. Shipments of pipe are due to arrive soon and work will be under way at an early date. Construction will be directed by Joe Works, superintendent.

## Cities Service Gas Rate at Kansas City, Kan., Is Sustained

WASHINGTON, D. C.—The Federal Power Commission announced it had dismissed a proceeding concerning rates for natural gas sold by Cities Service Gas Co. to the Western Light & Telephone Co. of Kansas City, Kan. The order said that a Cities Service rate schedule, filed last February, constituted a compromise between the two companies with respect to rates, and Western Light & Telephone asked withdrawal of its petition to suspend a previous schedule.

## Application Is Filed for Russellville-Vincennes Line

WASHINGTON, D. C.—Ray Phebus, engaged in oil and gas-leasing development at Centralia, Ill., has applied to the Federal Power Commission for a certificate of public convenience and necessity to construct and operate a natural-gas pipe line from the Russellville field in Lawrence County, Illinois, a distance of 8 miles to the lines of the Hoosier Gas Corp. near Vincennes, Ind., for resale in Vincennes, Washington and Princeton, Ind., and their environs. Estimated cost is approximately $50,000.

The applicant, owning or controlling production acreage in Lawrence County, states that the territory proposed to be served is already being served by another natural-gas company and that a contract with Hoosier Gas Corp. for delivery of gas makes possible a more adequate supply at rates which would effect substantial savings to consumers and to the purchaser.

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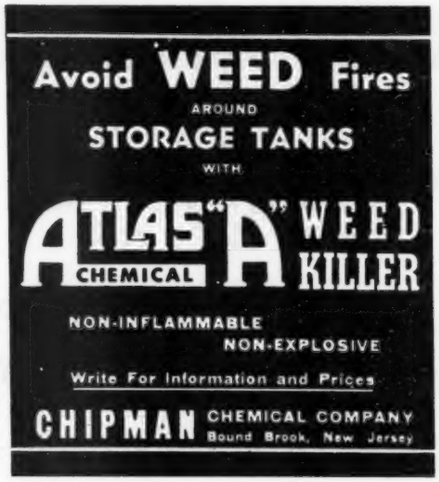


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# FIELD DEVELOPMENTS...

## HIGHLIGHTS FROM THE WEEK'S NEWS—

Completions remained at approximately the level of previous weeks, the total dropping from 586 to 572. Oil wells increased 9 to 390 and gas wells 4 to 53, while the dry holes decreased from 156 to 129. The largest declines in dry holes were in Southwest Texas with 11, 8 in Ohio, 7 in Oklahoma and 6 in West Texas.

The week formed a sort of suspense period as significant developments appeared to be on the verge of breaking. Probably the most important was a possible extension of the San Joaquin Valley production northward. Unlike previous extensions, this one is well out in the valley and also unlike recent discoveries is at comparatively shallow depth. In Martin County, Texas, showings well out in the basin may start operators on another trend play parallel to the older developments. In Illinois, the last of the big fields, Louden, was on the verge of knowing whether it had Devonian production or not. In Oklahoma a Simpson strike at Velma, added to the Cumberland development, will turn operators into the old declining fields of the southern Oklahoma area as the northern sector remains steady.

The eastern gas play continues strong with several important tests in the Onondaga and nearing the Oriskany in both Pennsylvania and West Virginia. The most active drilling campaign eastern Kentucky has seen for many years is also well under way, with more than 50 active operations.

**CALIFORNIA:** California's long-awaited major discovery may be in sight as Shell's Raisin City test shows oil at 4,700 ft. The well is about 18 miles northeast of Cantua Creek, which has proved a disappointing prospect, and is about 25 miles northeast of the Coalinga field which has marked the farthest north major field in the San Joaquin Valley to date. A successful completion at this shallow depth will open up a large area for prospecting. The deep zones at Inglewood and Dominguez continue active. Barnsdall obtained showings in both the upper and lower Modelo sands in its County Jail Farm test (p. 87).

**LOUISIANA GULF COAST:** The Octave Pass discovery in Plaquemines Parish is officially completed from the Miocene at 11,400 ft. Humble has favorable showings at 10,400 ft. in its Bayou Sale prospect, St. Mary Parish. Bay Marchand dome, offshore from La Fourche Parish, has proved to be a very large one but production has not yet been discovered (p. 95).

**KANSAS:** A large gas well 8 miles from Cunningham gives Pratt County its second large field. These pools are farther down on the flanks of the Central Kansas uplift than the Stafford County oil development (p. 93).

**ARKANSAS:** An outpost 3 miles from the Schuler field may prove to be on a small structure, separated from the main field by a saddle (p. 110).

**APPALACHIAN AREA:** With several tests in or near the Onondaga lime, and a West Virginia test nearing the Oriskany, gas development is continuing active (p. 109).

**ILLINOIS:** Whisenant & Trenchard's Devonian test in the Louden pool is below the top of the Devonian and was expected to strike the pay horizon at any time. The old Allendale pool is extended about 1 mile north (p. 98).

**SOUTHWEST TEXAS:** Oil has been found in the Frio at Cologne which formerly produced distillate from the Catahoula. The second well in the new Woodsboro field, Refugio County, has extended production 3,000 ft. northwest of the discovery. Saxet is on the way to receiving its first 10,000-ft. test as materials are being moved in. Agua Dulce is apparently extended a mile southeast, while a dry hole limits Stratton on the northeast. A major extension to the Kreis field or new production flanking the east side of Loma Novia is in prospect (p. 107).

**WEST TEXAS:** Gulf's projected 10,000-ft. pool in Crane County is nearer an actuality as the Ellenburger test made a small flow while swabbing. The Abell field in Pecos County seems to have reversed normal procedure by finding production in the Permian after it was already producing from the Ordovician. A new sand above the regular pay is picked up by a Taylor-Link outpost. Martin County may get its first production if Magnolia's test holds up. If successful this might mark a trend with the Slaughter field paralleling the three other major trends in West Texas and including Terry and Scanlon counties (p. 82).

**OKLAHOMA:** With eight wells offsetting the two discoveries under way, the potentialities of Tecumseh Lake and Guthrie will soon be better appraised. A discovery which may have widespread importance is in the Simpson in the old Velma pool. This pool has been producing from shallow sands for many years but Skelly's new test picked up light oil at the 7,150-ft. level. The field is on the same trend as the Milroy pool which produces from the Viola (p. 91).

**TEXAS GULF COAST:** After several tests, the Lakeview prospect in Wharton County may prove productive in the W. R. Davis wildcat. Oyster Bayou has been designated a new pool on the Willow Slough-Seabreeze structure. It was formerly thought that it might be a major extension to the former field (p. 101).

**NORTH CENTRAL TEXAS:** Official gages confirm two discoveries in Montague County. The wells are relatively small. Several wildcats in Clay County are near the testing stage. Activity in South Carbon, Eastland County, is spurred by the completion of the field's largest producer, the thirteenth in the field (p. 84).

**EASTERN TEXAS:** Plans are under way to erect a recycling plant at Willow Springs. Activity at Hawkins attains a peak as the field is extended ½ mile northeast (p. 111).

**MICHIGAN:** This week marks the first in many weeks when production has risen. Adams and Vernon are the fields most responsible for arresting the decline (p. 90).

**KENTUCKY:** With one company drilling 35 wells, the search for gas in the eastern area is in full swing. A new oil field has been brought in in Martin County (p. 97).

**NEW MEXICO:** Pressure-maintenance projects are announced for the Maljamar and Loco Hills fields. The former of these fields has had very slight declines in production over a 13-year period and wells have shown phenomenally large yields on small initial production (p. 82).

## COMPLETIONS IN ALL FIELDS . . .

(Week Ended May 3, 1941)

| | Oil | Gas | Dry | Total | 1941 total comp. to date | 1940 total comp. to date |
|---|---|---|---|---|---|---|
| N. Y., Pa., and W. Va. | 72 | 13 | 5 | 90 | 1,556 | 1,250 |
| Ohio | 6 | 15 | 6 | 27 | 491 | 319 |
| Indiana | 1 | 0 | 4 | 5 | 140 | 104 |
| Kentucky | 10 | 14 | 6 | 30 | 191 | 144 |
| Illinois | 44 | 0 | 20 | 64 | 966 | 1,111 |
| Michigan | 6 | 1 | 10 | 17 | 277 | 410 |
| Kansas | 32 | 1 | 13 | 46 | 567 | 476 |
| Oklahoma | 25 | 5 | 6 | 36 | 483 | 573 |
| Nebraska | 1 | 0 | 1 | 2 | 29 | 3 |
| Missouri, Iowa | 0 | 0 | 2 | 2 | 3 | 2 |
| Texas: | | | | | | |
| North Central Texas | 39 | 0 | 24 | 63 | 893 | 1,028 |
| West Texas | 37 | 0 | 1 | 38 | 634 | 695 |
| Texas Panhandle | 9 | 0 | 0 | 9 | 167 | 187 |
| Eastern Texas | 29 | 1 | 3 | 33 | 393 | 239 |
| Texas Gulf Coast | 17 | 1 | 4 | 22 | 343 | 438 |
| Southwest Texas | 21 | 0 | 9 | 30 | 542 | 754 |
| Total Texas | 152 | 2 | 41 | 195 | 2,954 | 3,341 |
| North Louisiana | 9 | 2 | 2 | 13 | 196 | 199 |
| Louisiana Gulf Coast | 14 | 0 | 10 | 24 | 282 | 292 |
| Total Louisiana | 23 | 2 | 12 | 37 | 478 | 491 |
| Arkansas | 0 | 0 | 1 | 1 | 57 | 71 |
| Mississippi, Alabama | 5 | 0 | 1 | 6 | 80 | 27 |
| Montana | 0 | 0 | 0 | 0 | 75 | 45 |
| Wyoming | 0 | 0 | 0 | 0 | 39 | 48 |
| Colorado, Utah | 0 | 0 | 0 | 0 | 11 | 6 |
| New Mexico | 3 | 0 | 0 | 3 | 93 | 220 |
| California | 10 | 0 | 1 | 11 | 342 | 340 |
| Total United States | 390 | 53 | 129 | 572 | 8,832 | 8,981 |
| Total previous week | 381 | 49 | 156 | 586 | | |
| Week ended May 4, 1940 | 416 | 50 | 96 | 562 | | |

By
R. MARNE SANFORD

# Crane County 10,000-ft. Test Heads Oil While Swabbing

MIDLAND, Tex., May 5.—Prospects for production below the 10,000-ft. level in Crane County brightened the past week as Gulf 1-F University, in the eastern part of the county, made a small head of oil while pulling tubing and later in the week showed a pressure increase of about 50 lb. on the casing.

## SUMMARY OF COMPLETIONS

| | No. | Bbl. | Footage |
|---|---|---|---|
| ***Northern West Texas*** | | | |
| Oil wells: Slaughter | 9 | 6,576 | 44,751 |
| Wasson | 8 | 6,258 | 40,990 |
| Seminole | 3 | 1,780 | 15,838 |
| Total | 20 | ..... | 101,579 |
| ***Southern West Texas*** | | | |
| Oil wells: Waddell | 2 | 5,505 | 8,039 |
| Foster | 2 | 817 | 8,681 |
| Johnson | 2 | 3,330 | 8,277 |
| Goldsmith | 2 | 2,644 | 8,481 |
| Abell | 1 | 1,210 | 5,535 |
| McElroy | 2 | 5,834 | 5,768 |
| Other fields | 6 | 1,665 | 14,936 |
| Dry holes | 1 | ..... | 1,730 |
| Total | 18 | ..... | 61,447 |
| ***Texas Panhandle*** | | | |
| Oil wells | 9 | 2,329 | 26,471 |
| ***Southeast New Mexico*** | | | |
| Oil wells | 3 | 127 | 7,192 |

No. 1-F University is located in Section 22, Block 31, University Survey, about 4 miles southwest of the Dunes field. At last reports the hole was being swabbed below 6,500 ft., returning mostly wash water and showing a small amount of gas. Prior to swabbing the hole, operators circulated for 3 hours, lifting the fluid column to within 400 ft. of the top of the hole. Total depth is 10,658 ft. with top of the Ellenburger called at 10,629 ft. The 7-in. casing is cemented at 10,610 ft. with tubing run to 10,652 ft.

### Indicated Pecos Discovery

An outpost well on the northeast side of the Simpson lime-producing Abell field of northern Pecos County blew out the past week to indicate the opening of a prolific producing level in the lower Permian lime zone. It was C. J. Siemoneit 1 W. T. Walsh, Lot 11, Section 25, Block 9, H.&G.N. Survey. The well began showing gas at 3,358 ft. and after drilling another foot the well blew out. Another foot of hole started an estimated 250 bbl. of oil daily flowing through the casing together with an estimated 7,000,000 cu. ft. of gas. Started as an Ordovician outpost to the Abell field, the operator stated he would complete the well at the shallow level and twin the well with an Ordovician test should the initial show hold up under subsequent testing. This it failed to do, making only 15 bbl. of oil and 50 bbl. of sulfur water when tested the following day. It was last reported drilling ahead below 3,450 ft.

### Taylor-Link Discovery

An east outpost to the south end of the Taylor-Link field of northern Pecos County, Petroleum Drilling Co. 1 Amerada-University found a new pay level from 120 to 130 ft. above the regular pay of the field and is being tested for official completion. Located in the SE cor. Section 32, Block 16, University Lands Survey, the outpost was flowing by heads through casing early the past week and later when tubing was run several short flows were made. Testing continued as the week closed. Being an edge test to the field and since this horizon was not found oil-bearing in other field wells, it is thought that a new subordinate structure has been found.

### Deep Activity

*NEW DEEP WILDCAT.*—Plans were announced the past week for a new 6,000-ft. Ordovician wildcat for northern Pecos County. It will be drilled by J. L. Greene, Paul L. Davis and J. E. Redmond and is to be 1 Iowa Realty Trust, tentative location being in the E¼ W¼ Section 29, Block 10, H.&G.N. Survey. The site is about 2 miles north of the Culbertson & Irwin 1 Heiner strike, completed for a small well from the Ellenburger lime about a month ago. The Heiner discovery was 9 miles west of the Apco field. Operations are due to start at once on the wildcat.

*SECOND WRISTEN WELL GAGED.*—Gulf Oil Corp.'s second attempt at deep Silurian lime production in the Shipley field of Ward County was a success the past week as 6 Wristen took an official gage of 782 bbl. daily, flowing, after 5,000 gal. acid treatment. Although officially gaged, the well will be further treated with 10,000 gal. of acid, after which, should the production show an increase, another completion rating will be taken. No. 6 Wristen is in Section 18, Block 5, H.&T.C. Survey, an east offset to No. 5 which discovered the deep level late last year. The new well, bottomed at 7,080 ft., topped the Silurian lime at 6,927 ft.

## NORTHERN WEST TEXAS

Attention in the northern part of the Permian basin as the week closed was centered on a deep exploratory hole in Martin County. Magnolia 1 N. B. Teague, in the northwestern part of the county and 467 ft. out of the northwest corner of Labor 10, League 260, Borden County School Lands Survey, 12 miles southwest of Lamesa, was testing after showing small amounts of gas with some free oil. The 5½-in. casing is cemented at 6,849 ft. with perforations being from 6,723-53 ft. and 2-in. tubing and packer at 6,700 ft. Total depth is 7,701 ft. in lime with cement plugs in the casing not yet drilled out. At last reports the fluid level had been swabbed down 2,000 ft. from the top of the hole and gas with shows of oil were still noted.

*(Completions on Page 113)*

### NORTHERN WEST TEXAS WILDCAT REPORT

**Andrews County**

Phillips 1 University-Drews, NW NE Sec. 32, Blk. 10, University Lands Sur., drilling 7,486 ft.
Furham Pet. 1 Lockhart-Brown, Sec. 24, Blk. 42-A, P.S.L. Sur., T.D. 5,600 ft., P.B. 4,558 ft., treated 1,000 gal. acid, retreating 2,000 gal. acid, flowed 100 bbl. fluid in 24 hr., 2 per cent b.s. and w., still testing.
Mascho Oil 1 Fisher, NE NE SE Sec. 16, Blk. 36-A, P.S.L. Sur., top Yates sand 2,835 ft., drilling 2,848 ft.
Mascho Oil 1 University, Sec. 11, Blk. 13, University Sur., 6½ mi. NW of 1 Fisher, drilling 240 ft.

**Borden County**

M. L. Richards 1 W. R. Dunn, SW NE Sec. 307, Blk. 97, H.&T.C. Sur., 3,200-ft. test, rigged up and S.D.
B. C. Mann 1 Canning & Reynolds, NW NE Sec. 151, Blk. 25, H.&T.C. Sur., 3,000-ft. test, drilling 1,821 ft.

**Cochran County**

George Livermore 1 Wright, old T.D. 4,997 ft., S.D. 6,621 ft.
O'Neal Drilling Co. 1 Wright, NE cor. Labor 12, Lge. 60, Martin C.S.L. Sur., 3 mi. N of Dean area, drilling 4,191 ft.
Magnolia 1 Ralph, NE cor. Sec. 20, Blk. 38-A, P.S.L. Sur., building derrick.

**Gaines County**

Amon G. Carter 4-D Wasson, NW SE Sec. 50, Blk. AX, P.S.L. Sur., logged new pay about 6,610 ft., tight well, application filed to drill to 11,000 ft., S.D. 10,078 ft.

**Hale County**

Humble 1 Byrd, SE SE NE Sec. 17, Blk. K, E.T.R.R. Sur., 9,000-ft. test, fishing pipe 3,730 ft.

**Lubbock County**

A. L. Henderson 1 W. D. McMillan, SE NW Sec. 4, Blk. 2-D, H.E.&W.T. Sur., location.

**Mitchell County**

C. E. Casebolt 1 J. E. Franklin, NE NE NW Sec. 50, Blk. 27, T.&P. Sur., 15½-in. 170 ft., 12½-in. 256 ft., T.D. 2,470 ft., last report.
from E lines, Sec. 65, Blk. 97, H.&T.C. Sur., location.
G. R. Anderson 1 Simpson, 2,310 ft. from S and 330 ft.

**Martin County**

Magnolia 1 N. D. Teague, NW NW Lab. 10, Lge. 260, Borden C.S.L. Sur., 5½-in. at 7,701 ft., T.D., perf. casing 6,723-53 ft., swabbed water and show oil and gas.

**Yoakum County**

George Livermore 1 Ownby, NE NE NE Sec. 502, Blk. D, Gibson Sur., drilled broken saturation 5,237-85 ft., flowed several heads oil, treated 3,500 gal. acid, flowed 121 bbl. daily, tested 2,360,000 cu. ft. gas daily, T.D. 5,348 ft., flowed 98 bbl. in 3¾ hr., still testing.
J. C. Maxwell 1 Fields, NE NE Sec. 46, Blk. D, Gibson Sur., 5,500-ft. test, location.

### SOUTHERN WEST TEXAS WILDCAT REPORT

**Crane County**

Gulf 1-F University, SE SE Sec. 22, Blk. 31, University Sur., top Simpson 9,600 ft., T.D. 10,658 ft., show oil, set casing and ran tubing to test, well made small head of oil, still testing.
Eastham & Russell 1 McClintic, NE SE Sec. 210, Blk. F, C.C.S.D.&R.G.N.G. Sur., 7-in. 2,517 ft., 5½-in. 2,870 ft., show oil 2,882-87 ft., T.D. 3,170 ft., last report.

**Crockett County**

R. H. Henderson 1 Couch, 467 ft. from N and 2,173 ft. from E lines Sec. 37, Blk. GG, H.E.&W.T. Sur., drilling 160 ft.
Zay Kimberlain 1 Robbins, 417 ft. from S and E lines Sec. 4, Blk. W, G.C.&S.F. Sur., location.

**Ector County**

Cities Service 1 F. C. Addis, SW SE Sec. 34, Blk. 43, Twp. 2s, T.&P. Sur., drilled in new hole to 5,500 ft., P.B. 4,210 ft., pumped 15 bbl. oil and 30 bbl. water in 4 hr.
Forest Development Co. 1-C Edwards, SE SE SW Sec. 20, Blk. 43, Twp. 3s, T.&P. Sur., drilling 4,470 ft.
M. D. O'Quinn 1 TXL, SE NW W½ Sec. 31, Blk. 44, Twp. 3s, T.&P. Sur., location.

**Loving County**

H. C. McAuley 1 E. Hall, SE Sec. 60, Blk. 7, W.&N.W. Sur., T.D. 4,820 ft., P.B. 4,803 ft., testing water shutoff.
Pinal Dome Oil 1 Michigan Oil fee, NW SW Sec. 15, Blk. 26-C, P.S.L. Sur., 5,300-ft. test, drilling 3,960 ft.

**Pecos County**

Redmond, Greene & Davis 1 Iowa Trust, E¼ W¼ Sec. 29, Blk. 10, H.&G.N. Sur., Ordovician test.
O'Quinn 2 O'Neil, S½ Sec. 74, Blk. 10, H.&G.N. Sur., Ordovician test, drilling 1,290 ft.
Sinclair Prairie 1 Grove, Lot 9, Sec. 26, Blk. 9, H.&G.N. Sur., Ordovician test, drilling 3,900 ft.

**Reagan County**

Amerada 1-RA University, 1,980 ft. from N and 660 ft. from E lines of Sec. 3, Blk. 48, University Sur., Ellenburger lime test, drilling 4,757 ft.
H. Schooler 1 R. A. Wolters, NE NE Sec. 51, G.C.&S.F. Sur., 8¼-in. 1,262 ft., S.D. 2,280 ft., show gas.

**Reeves County**

C. A. Kitos 1 A. B. Buchard, SW Sec. 7, Blk. 58, P.S.L. Sur., Delaware test, T.D. 748 ft., last report.
Roy Johnson 1 Perkins, Sec. 18, Blk. 7-C, P.S.L. Sur., S.D. 3,362 ft.

**Schleicher County**

Harold B. Opp 1 Jackson, Sec. 41, Blk. LL, T.C. Sur., T.D. 6,155 ft., fishing tools.

**Sutton County**

S. B. Roberts 1 George Allison, NW NE Sec. 44, Blk. K, G.H.&S.A. Sur., S.D. 740 ft., casing.
Domain 1 G. S. Allison, SW NE Sec. 91, Blk. 9, T.W. N.G. Sur., Ellenburger lime test, S.D. 1,098 ft.

**Terrell County**

Texas Consolidated Oil 1 Holmes, NE NE Sec. 14, Blk. 2-A, G.H.&S.A. Sur., 3,600-ft. test, 10-in. 1,100 ft., T.D. 1,275 ft., preparing to start up.
H. H. Sides 1 Rose, Sec. 15, Blk. 148, T.&St.L. Sur., T.D. 720 ft., last report.
L. M. Thomasson 3 Bates-Graham, 660 ft. from N and 2,490 ft. from W lines, Sec. 30, Blk. 1, I.&G.N. Sur., drilling 1,264 ft.

**Upton County**

H. C. Wheeler 1 Kincaid, 2,173 ft. from N, 467 ft. from E lines, Sec. 1, G.C.&S.F. Sur., drilling 684 ft.
Pittman & Atkins 1 Fowler-Starnes, NW NE Sec. 89, G.C.&S.F. Sur., 3,500-ft. test, S.D. 420 ft.

**Ward County**

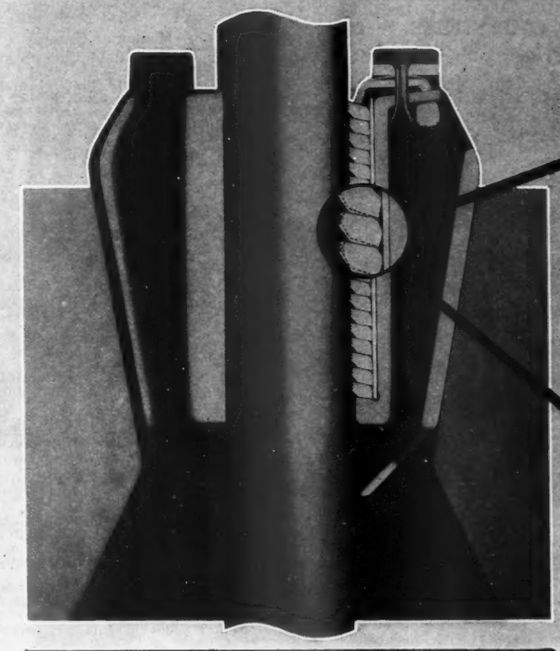
Fitzpatrick & Slack 1 Wilson, Sec. 145, Blk. 34, H.& T.C. Sur., 1½ mi. SE of discovery well, T.D. 5,034 ft., testing show gas and oil, 5½-in. at 4,845 ft.
Gulf 6 Wristen, 1,997 ft. from SE and 1,980 ft. from NE lines, Sec. 18, Blk. 7, H.&T.C. Sur., T.D. 7,080 ft., treated 5,000 gal. acid in Silurian lime, made 782 bbl. daily, preparing to retreat 10,000 gal.
J. E. Fitzpatrick 1 T. B. Pruit, SW SW Sec. 23, Blk. 1, W.&N.W. Sur., S.D. 140 ft.
Bells Wells 1 Wilson, NW SW Sec. 133, Blk. 34, H.& T.C. Sur., drilling 380 ft.

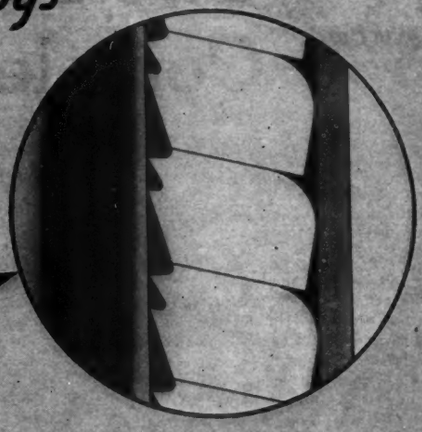
**Winkler County**

Sam Weiner 2 Halley, NW NE Sec. 7, Blk. 11-B, P.S.L. Sur., drilling 1,478 ft.

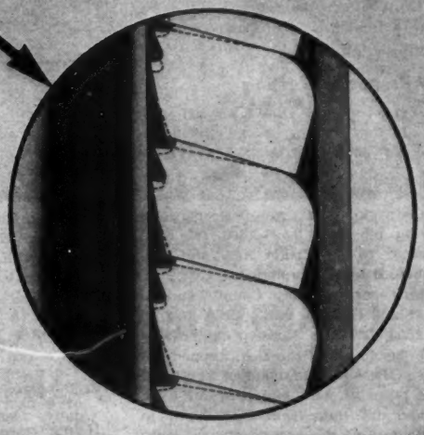
*(Continued on Page 113)*

# How Mission *"Rolling Dogs"* RELEASE PIPE INSTANTLY





***GRIPPING.*** When pipe is being supported by slips, the small non-continuous dog teeth grip the pipe with minimum damage. The dogs are shown in supporting position.



***RELEASING.*** When the load is taken off the slips, the dogs roll upward and away from the pipe as indicated—releasing the pipe and releasing the slips from the bowl.

MISSION Slip dogs roll upward and away from the pipe as it is lifted—assuring instant release of the pipe and preventing slips from sticking in the bowl.

In addition to assuring instant release, Mission Slips help to speed up round trips in other ways. Light weight, perfect balance and well designed handles *save time* and *reduce operator fatigue.*

**Pipe is Protected.** Ample gripping area prevents bottlenecking and small, non-continuous teeth prevent undue stress concentration and corrosion fatigue.

**Check Up!** Make sure you have a set of Mission Slips for every pipe handling need. Mission Manufacturing Company, Houston, Texas, Export Office, 30 Rockefeller Plaza, New York.

*For Faster Round Trips and Maximum protection to pipe — use —*

**MISSION**

**ROLLING DOG SLIPS**

Mission "Rolling Dog" Slips
One Piece Type

# Two Montague County Wells Completed For Pool Openers

By
R. MARNE SANFORD

WICHITA FALLS, Tex., May 5.—Definite opening of two new deep fields in Montague County, together with continued testing at wildcat prospects in Clay County, featured a week of new discoveries for the North Texas district.

Final gage was made at the Sinclair Prairie 1 Clingensmith, Block 149, Belcher subdivision, 5 miles southwest of Nocona. The strike is producing from the Bend conglomerate of Pennsylvanian age found at several points throughout the county. The well rated a daily potential of 1,160 bbl., based on a 3-hour flow of 145 bbl. The well made 86 bbl. the first hour, 35 bbl. the second hour and 24 bbl. the third hour. This declining rate indicates that the well might have died under a full 24-hour flowing gage. Production is from 6,119-31 ft., total depth.

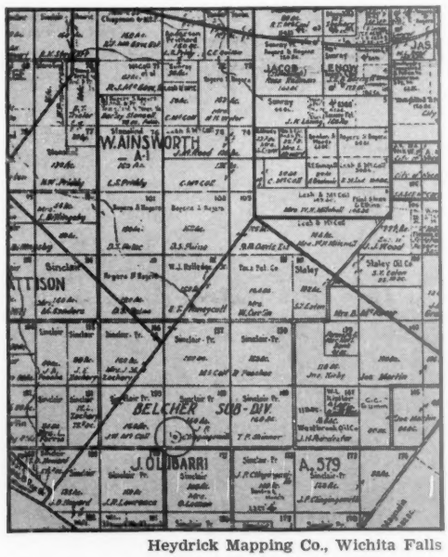
About 2 miles southeast of the Ringgold field in western Montague County, Benson & Benson 1 Wilmer Seay, Owensby Survey, reported a gage of 244 bbl., pumping, in 24 hours. In the 8-hour period following the well pumped 90 bbl. About a week ago the well made several short flows and died. It is bottomed at 5,762 ft. in saturated Bend conglomerate topped at 5,746 ft. Whether the 24-hour pumping gage will be classed as final was not reported, further testing possibly being planned for the strike.

## Clay Prospects Testing

In Clay County several wildcat tests were attempting commercial production as the week closed. In the western part of the county, 1 mile northwest of the Horton & Wiggins Caddo lime discovery of several months ago, L. T. (Bobby) Burns 1 Fred Wines, Block 1, Halsell subdivision, was running drill-stem test on sand showing oil from 3,596-3,606 ft., total depth. It is contracted to the Caddo lime and will drill to that depth before final completion.

In the southwestern part of Clay County and in the Antelope field, Shell Oil Co., Inc.'s deep test, 9 Henderson, Block 2605, T.E.&L. Survey, exploratory hole below the three pay levels of the field, topped the Chappell lime, upper Mississippian member, at 5,622 ft. and found some porosity with stains of oil from 5,682 to 5,805 ft. and dry lime from that depth to 5,898 ft. A drill-stem test of the section showed only water and at last report the test was drilling below 5,898 ft.

In extreme eastern Clay County, 2 miles west of the Ringgold field of Montague County, Gulf 1 Scaling, Block 3, T.&N.O. Survey, in the area of the old 3,900-ft. Worsham field, was cleaning out cavings after pulling casing from hole. Total depth is 5,814 ft. with top of the Ellenburger lime reported at 5,770 ft. Dolomite with slight shows of oil had been logged in drilling the last 40 ft. of hole, however, preliminary tests showed only wash water. Further testing is likely.




Heydrick Mapping Co., Wichita Falls

***Another new discovery for North Texas during the past week was the Sinclair Prairie 1 Clingingsmith, just southwest of the Rogers & Rogers field of Montague County. Production is from the Bend conglomerate***

## SUMMARY OF COMPLETIONS

*North Texas*

| | No. | Bbl. | Footage |
|---|---|---|---|
| Oil: Archer field | 2 | 323 | 5,441 |
| Clay field | 3 | 120 | 3,534 |
| Antelope field | 2 | 1,600 | 6,458 |
| Nocona field | 2 | 12 | 1,645 |
| Wichita field | 5 | 124 | 5,495 |
| K.M.A. and K.M.A. Deep | 3 | 565 | 11,800 |
| Harrold field | 2 | 272 | 6,463 |
| Fargo field | 2 | 415 | 8,355 |
| Olney field | 3 | 114 | 2,705 |
| Other fields | 7 | 850 | 19,836 |
| Wildcats | 1 | 750 | 6,283 |
| Dry: Fields | 12 | ..... | 20,100 |
| Wildcats | 2 | ..... | 6,035 |
| Total | 46 | ..... | 104,150 |

*West Central Texas*

| | | | |
|---|---|---|---|
| Oil: Lewis field | 2 | 378 | 3,890 |
| Other fields | 3 | 534 | 6,801 |
| Dry: Fields | 7 | ..... | 6,297 |
| Wildcats | 3 | ..... | 2,479 |
| Total | 15 | ..... | 19,467 |

## NORTH TEXAS COMPLETIONS

### Archer County

Miscellaneous fields: L. T. Burns 2 McCrory, 63 bbl. in 3 hr., ¾-in. choke, 50-qt. shot, est. 225 bbl. daily, 3,892-3,903 ft.
Henry Grace 1 Wilson, 98 bbl. daily, pumping, 1,519-38 ft.
Fresno Oil 1 Hammond, dry at 1,408 ft.
Young & Woody 1 Harmell, dry at 1,551 ft.
Rathke Oil 6 Meade, dry at 1,480 ft.
United Producers 2 Bearden, dry at 1,125 ft.
United Producers 3 Bearden, dry at 1,125 ft.
Hull-Silk: Sinclair Prairie 2 Jones, 145 bbl. oil and 77 bbl. water, pumping, daily, 20-qt. shot, 3,792-3,807 ft.
Griffith: Jack Kadane 1 Griffith, 95 bbl. in 3 hr., ¾-in. choke, est. 275 bbl. daily, 70-qt. shot, 4,357-77 ft.

### Baylor County

Wildcat: Amerada 1 Upshur C.S.L., Lot 58, Upshur Co. Sch. Lds. Sur., top Canyon 1,970 ft., Strawn 3,190 ft., Caddo 4,725 ft., Mississippian 5,245 ft., Ellenburger 5,507 ft., dry at 5,510 ft.

### Clay County

Miscellaneous fields: Gorman & Norwood 6 Taylor, 60 bbl. daily, pumping, natural, 1,127-41 ft.
Duncan, Arnhold & Duncan 21 Duncan, 35 bbl. daily, pumping, natural, 1,225-42 ft.
George G. Golden 1 Enyart, dry at 291 ft.
F. H. Gohlke 2 Bunnenberg, dry at 1,193 ft.
Stayton Oil 2 McGregor, 25 bbl. daily, pumping, natural, 1,144-51 ft.
Wildcat: Shell 1 Coleman A, 138 bbl. in 3 hr., ¾-in. choke, natural, est. 750 bbl. daily, Mississippi pay 6,158-6,283 ft., located Lot 24, Calhoun Co. Sch. Lds. Sur.
Antelope: Shell 9 Coburn, 598 bbl. in 8 hr., 2-in. casing outlet, natural, est. 1,200 bbl. daily, 3,210-22 ft., T.D. 3,254 ft.
Shell 2 Mullens, 196 bbl. in 8 hr., open tubing, natural, est. 400 bbl. daily, 3,195-3,204 ft.

### Cooke County

T.C.U.: High Point Oil 2 Fette, 35 bbl. in 12 hr., pumping, est. 55 bbl. daily, 1,115-20 ft.
Cooke: Seitz, Comegys & Seitz 12 Poteet, 21 bbl. in 16 hr., pumping, est. 30 bbl. daily, 1,069-1,110 ft. and 1,300-04 ft., total depth 1,445 ft.
Voth: Whitfield, Pearson & Grimes 12 Sicking, 46 bbl. in 4 hr., pumping, natural, est. 175 bbl. daily, 1,267-97 ft.

### Jack County

Wildcat: C. H. Peterson 1 Hoefle, John W. Barrett Sur., Abst. 48, dry at 525 ft.
Bryson: Panhandle Ref. 7 Daugherty, 200 bbl. daily, pumping, natural, 2,923-37 ft., P.B. from 3,200 ft.

### Montague County

Nocona: Claymont Oil 8 Bouldin, 9 bbl. daily, 55 sticks dynamite, 802-18 ft.
Pure Oil 14 Keck A, 13 bbl. oil and 3 bbl. water daily, pumping, 30-qt. shot, 809-27 ft.
Rogers & Rogers: Carnation Oil 1 Molsbee, 48 bbl. in 6 hr., ¼-in. choke, natural, est. 150 bbl. daily, 4,568-90 ft.

### Wichita County

Wichita: F. A. Dickinson 18 fee, 5 bbl. daily, 810-24 ft.
Akin, Dimock & Costley 4 Dodson, 24 bbl. daily, pumping, 1,306-24 ft.
Akin, Dimock & Costley 5 Dodson A, 60 bbl. daily, pumping, 1,306-21 ft.
Akin, Dimock & Costley 2 Waits, 25 bbl. daily, pumping, 1,313-28 ft.
Wolfe & Hull 5 Daume, 10 bbl. daily, pumping, 689-98 ft.
K.M.A.: George Proctor 55 Foster & Allen A, dry at 1,385 ft.
Tide Water and Perkins & Cullum 4 Mangold, 40 bbl. an hr., ¾-in. choke, 300-qt. shot, est. 225 bbl. daily, 3,679-3,774 ft.
Buffalo Oil 22 Ferguson, 100 bbl. in 3 hr., ½-in. choke, 300-qt. shot, est. 150 bbl. daily, 3,738-3,838 ft.
S. H. Fagadau 1 Potts, dry at 4,190 ft.
K.M.A. deep: Consolidated Oil 25 Ferguson, 94 bbl. in 3 hr., ¾-in. choke, est. 190 bbl. daily, 3,000 gal. acid., 4,192-94 ft., top Ellenburger 4,188 ft.

### Wilbarger County

Harrold: Kadane & Fidel 1 Cochrain, 38 bbl. an hr., ¾-in. choke, natural, est. 150 bbl., 3,271-81 ft.
Kadane & Fidel 1 Schlaffke, 122 bbl. daily, pumping, and flowing, 900-qt. shot, 3,165-82 ft.
Fargo: Humble 1 McCaleb, 106 bbl. in 6 hr., ½-in. choke, 3,000 gal. acid, 225 bbl. daily, 3,425-39 ft., T.D. 4,410 ft.
Snowden & McSweeney 1 Emmett, dry at 4,758 ft.
Anderson & Prichard 1 Flaniken, 60 bbl. in 3 hr., ½-in. choke, est. 190 bbl. daily, 1,500 gal. acid, perf. casing 3,890-3,902 ft. and 3,920-45 ft.

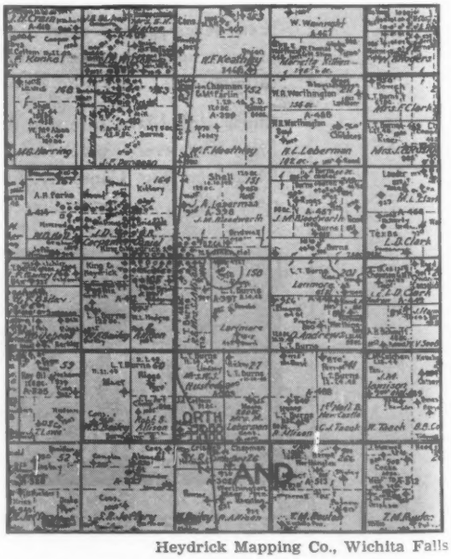
### Young County

Olney: J. E. McDonald 1 Marshall, dry at 650 ft.
Ard & Benson 6 Rogers, dry at 944 ft.
Burns 11 Rogers, 85 bbl. daily, pumping, natural, 882-98 ft.
Horwitz & Oldom 21 Graham, 24 bbl. daily, pumping, 500 gal. acid, 579-91 ft.
E. W. Hunt 12 Gass, 5 bbl. daily, pumping, natural, 1,213-16 ft.

## NORTH TEXAS WILDCAT REPORT

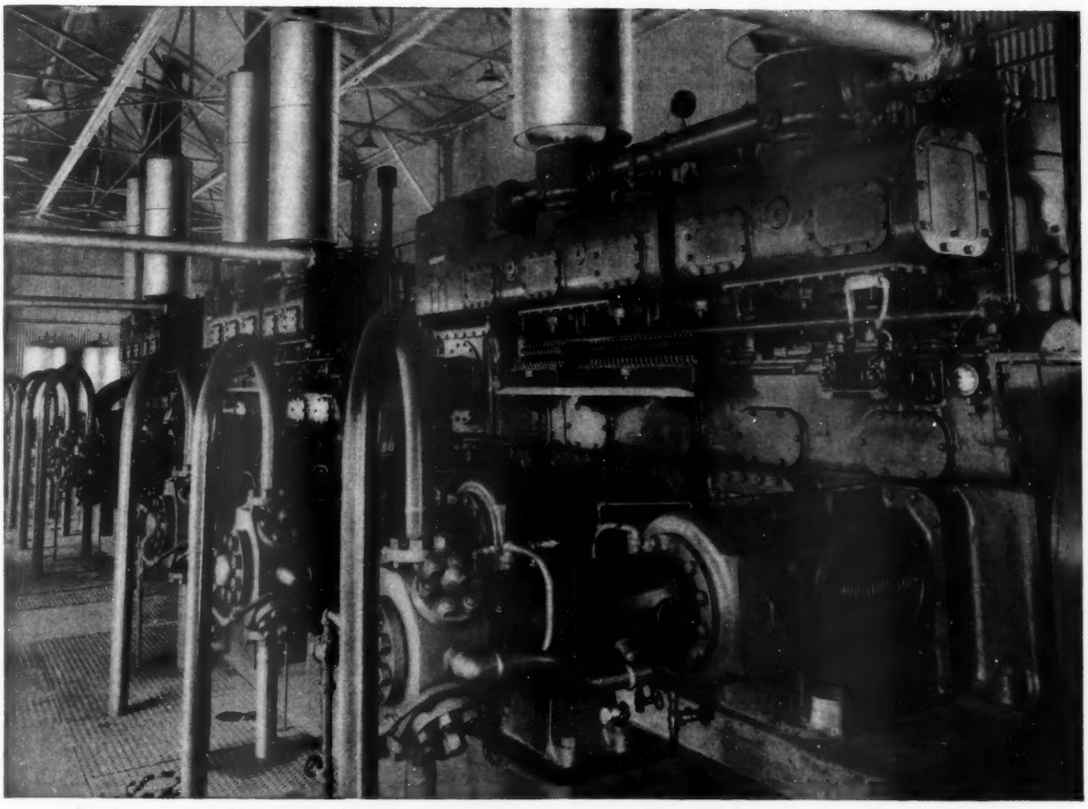
### Archer County

Bass & Dillard 1 McGregor, 467 ft. from N and W lines E. Goodwin Sur., Abst. 1135, 6,000-ft. test, drilling 2,000 ft.
C. W. Snoddy 1 Carter, SE cor. N 60 acres of W 120 acres of Sec. 38, Clark & Plumb subd., 1,400-ft. test, location.



Heydrick Mapping Co., Wichita Falls

***Setting off an almost unprecedented lease play for the northern part of Young County was the discovery of Mississippian lime production by the Burns 1-A Larrimore, 3 miles south of Olney***



Each of these three Worthington 625 horsepower angle engine-compressor units has a capacity of approximately 20 million cubic feet of gas per day. Suction pressure is maintained at 1700 p.s.i. and discharge pressure at about 2700 p.s.i.

# FOR REPRESSURING AND PRESSURE MAINTENANCE WORTHINGTON ANGLE ENGINE-COMPRESSORS

**...exemplify the most advanced engineering, based on the experience of more than 40 years in building over six hundred compressors for pressures of 2000 to 5000 p.s.i. Their straight-line design gives maximum accessibility and smooth power flow. Heavy construction throughout assures strength, rigidity and maintained alignment, with resulting low-cost and trouble-free operation.**

**Worthington angle gas engine-compressors are available in 9 sizes... 150 to 1000 brakehorsepower. They can be equipped with compressor cylinders from a wide selection of designs; cast iron, cast steel or steel forgings being used as pressure conditions may require.**

***Nearly three quarters of a million horsepower in gas engines in operation***

**WORTHINGTON PUMP AND MACHINERY CORPORATION**

General Offices: **HARRISON, NEW JERSEY** • Offices and Representatives in Principal Cities

GCI-3

# Corpus Christi eliminates the corpus delicti *

* *Corpus delicti*—the basic legal proof that a crime was committed; as in a murder, the actual body of the victim.

Waste in shipping bulk liquids leaves its own "corpus delicti" in the form of inventory losses, contamination, excessive insurance, and other profit leaks. Southwestern shippers can eliminate these crimes against prosperity—by using General American's mammoth Corpus Christi Terminal. In service, in privacy, it's *your* plant, without investment on your part. Check the seven exclusive General American benefits. You'll appreciate why we've had to *treble* our Corpus Christi capacity since 1936!

## ONLY GENERAL AMERICAN GIVES ALL THESE ADVANTAGES:

1. *NO CONTAMINATION.* Separate pumps, lines, storage zones for dissimilar commodities.
2. *MODERN PROTECTION.* Latest safety appliances; lowest insurance rates, minimum evaporation losses.
3. *RELIABLE CUSTODIANSHIP.* Our warehouse receipts are highest type of collateral everywhere.
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5. *NO WHARFAGE.* There is no wharfage charge at our own private docks.
6. *SPEED WITH SAFETY.* Day and night crews, complete facilities, eliminate all shipping delays.
7. *WORLD'S LARGEST TANK CAR FLEET.* One car or hundreds, wherever and whenever needed.

**Strategically located to serve you!**

GATX GENERAL AMERICAN

## GENERAL AMERICAN TANK STORAGE TERMINALS

**Goodhope, La. and Westwego, La.,** (Port of New Orleans)
**Corpus Christi, Texas**
**Carteret, N. J.** (Port of New York) **Galena Park, Texas** (Port of Houston)

**A DIVISION OF GENERAL AMERICAN TRANSPORTATION CORPORATION**


Deep Oil Development and Jim Jennings 1 Jentch, E 121 acres of W½ John Scott Sur., Abst. 915, drilling 3,000 ft.
J. R. Jones 1 Jones, 825 ft. from E and 150 ft. from S lines Sec. 103, Jefferson C.S.L. Sur., S.D., reaming 998 ft.
United Prod. 1 Beardon, 990 ft. from W and 1,731 ft. from N lines J. Roley Sur., Abst. 364, 6⅝-in. 1,027 ft., T.D. 1,055 ft.
W. A. Wise 1 Abercrombie, 2,100 ft. from S and 117 ft. from W lines Sec. 152, J. W. Harris subd., S.D. 1,066 ft.

**Clay County**

Gulf 1 C. W. Scaling, NW NW Sec. 31, T.&N.O. Sur., Abst. 685, 6,000-ft. test, show oil 5,596-5,617 ft., show oil and water, coring 5,189 ft.
L. T. Burns 1 Southerland, NE cor. of 100 acres of Sec. 63, J. H. Belcher Sur., 5,500-ft. test, top Caddo 5,322 ft., T.D. 5,386 ft., P.B. 4,437 ft., swabbing est. 30 bbl. oil and 4 bbl. water per day, still testing.
L. T. Burns 1 Fred Wines, 593 ft. from N and 476 ft. from E lines of Sec. 1, Haisell subd. 1, 5,500-ft. test, drilling 1,951 ft.
Bridwell Oil 2 Meyers, 3,350 ft. from W and 2,185 ft. from N lines Thompson Sur., Abst. 444, drilling 3,993 ft., 6,000-ft. test.
C. U. Beasley 1 Campbell, 150 ft. from NW line and 1,150 ft. from N cor. Sec. 140, Byers Brothers subd., S.D. 1,261 ft.

**Cooke County**

Gill & Sitherspoon 5 Wilson, 1,950 ft. from W and 3,500 ft. from N lines, Ehen Reed Sur., Abst. 849, 1,100-ft. test, hard sand 834-37 ft., tested 5 bbl. daily, S.D.

**Denton County**

C. H. Gannon 1 Aetna Life Ins. Co., 412 ft. from S and 212 ft. from W lines S. Yoakum Sur., Abst. 1439, 1,300-ft. test, drilling 812 ft.

**Hood County**

Aztec Oil 1 Gallagher, SW SE Robert Alway Sur., 3,000-ft. test, S.D. orders 2,200 ft.

**Jack County**

Continental 1 Robertson, M. J. Swan Sur., Abst. 1659, top Ordovician 5,380 ft., T.D. 5,577 ft., P.B. 5,514 ft., swabbing est. 50 bbl. oil per 7 hr. but will not flow, still testing, on gas lift flowed 22 bbl. oil and 10 bbl. water in 18 hr.
R. J. Conkling 1 Hoffle, A. James Sur., Abst. 318, 3 mi. S of Antelope, 3,500-ft. test, T.D. 3,128 ft., S.D. 3,165 ft.
K. N. Davis 1 Jones, NW cor. E½ Sec. 2555, T.E.&L. Sur., 1 mi. SE Perrin, 2,500-ft. test, moving in rig.
Harper-McClintock 1 Kinder, 1,400 ft. from E and 467 ft. from N lines, Sec. 2667, T.E.&L. Sur., S.D. 2,184 ft.
O. J. Perrin 1 Brumbelow, 1,045 ft. from S and 720 ft. from E lines, H. C. Ayers Sur., Abst. 4, S.D. 3,505 ft. after electrical survey.
Reed & Croft 1 Richards, 467 ft. from W and 1,200 ft. from N lines of C. Gates Sur., Abst. 237, 3,500-ft. test, digging pits.
Adam Grafe 1 H. R. Bloodworth, 6,986 ft. from S and 3,244 ft. from N lines, William McDonald Sur., Abst. 380, 3,500-ft. test, moved in material and S.D.
Alma Oil 1 Dees, 2,956 ft. from W and 466 ft. from S lines, George Taylor Sur., Abst. 877, drilling 4,474 ft.

**Montague County**

Redman Brothers 1 Hardy, 225 ft. from N and E lines of 41-acre tract in Fielding Secrest Sur., Abst. 665, 2,500-ft. test, pipe free, S.D. 2,447 ft.
Benson & Benson 1 Seay, SE SE SE Sec. 31, Blk. 4, H.&T.C. Sur., show oil 5,752-62 ft., flowed 10 bbl. oil in 1 hr. then died, still testing.
Sinclair Prairie 1 Clingingsmith, 467 ft. from S and W lines of Sec. 149, Jose Olabarri Sur., Abst. 579, top Caddo 5,662 ft., T.D. 6,131 ft., 7-in. at 6,119 ft., showed blow of gas and spray of oil, testing.

**Throckmorton County**

Jimmie Rogers 1 Timmons, NW cor. S½ Sec. 2189, T.E.&L. Sur., 4,200-ft. test, location.
Rathke Oil 1 Swagerty, 495 ft. from N and 746 ft. from E lines of SW Sec. 258, B.B.B.&C. Sur., 5,000-ft. cable-tool test, drilling 4,465 ft.

**Wichita County**

Charles E. Morrison 1 Cooper, NE cor. Blk. 3, Henry Hastie Sur., Abst. 92, first report.

**Wilbarger County**

O. H. Hammer 1 A. V. Shelton, NW NW Sec. 16, Blk. 11, H.&T.C. Sur., 4,500-ft. test, S.D. 524 ft., corrected.
W. B. Omohundro 1 Vaughn, 2,330 ft. from E and 330 ft. from N lines, S½ Sec. 9, Blk. 1-C, H.&T.C. Sur., S.D. 5,508 ft.
Wilcox Oil & Gas 1 Waggoner, 330 ft. from S and E lines, SW Sec. 43, Blk. 2, H.&T.C. Sur., 5,000-ft. test, drilling 2,658 ft.

**Young County**

Ben H. Rankin 1 Mary Logan, SW part Blk. 2, J. W. Doty Sur., 8 mi. NE Graham, 2 mi. W Nelson field, tested 1,000,000 cu. ft. gas from 4,288-95 ft., top Marble Falls 4,470 ft., S.D. 4,475 ft., waiting on spudder to drill deeper.
Burns 1-A Larrimore, Sec. 150, T.E.&L. Sur., top Marble Falls 4,395 ft., Mississippi lime 4,797 ft., saturation 4,902-07 ft., 4,827-78 ft., T.D. 4,927 ft., flowed 75 bbl. hourly, S.I. for pipe-line connection.

## WEST CENTRAL TEXAS

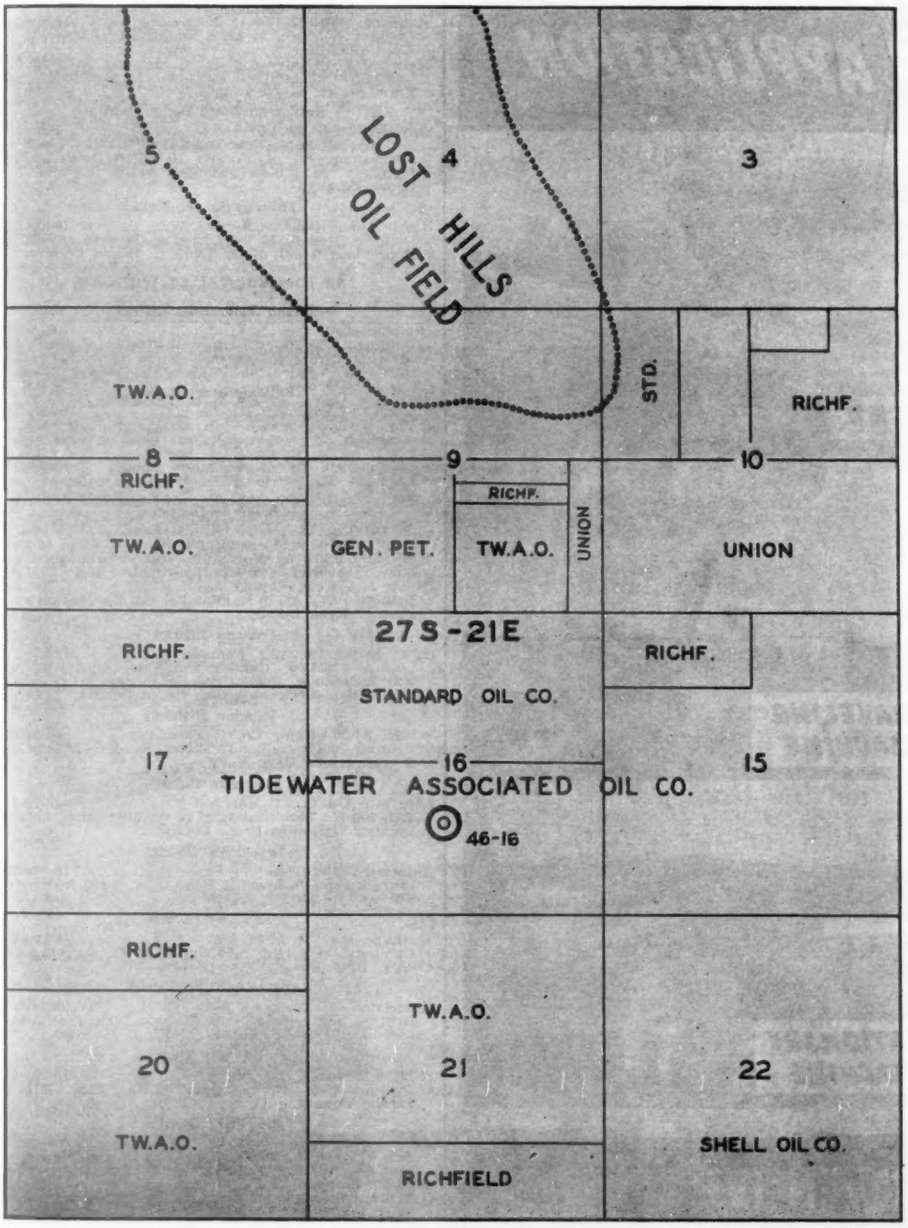
FORT WORTH, Tex., May 5.—Eastland County's increasingly active South Carbon field centered the attention at the close of the week in West Central Texas as the field's largest producer was indicated and several new outpost tests were preparing to start. Largest producer for the field was finaled at C. L. Maheney 2 Jackson, on the 40-acre Jackson tract in the S. H. Key Survey, an offset to the same operator's 1 Jackson which came in about a year ago to rejuvenate activity in the two-well field first opened by Dobbs Oil Corp. the previous year. No. 2 Jackson flowed 285 bbl. of oil in 8 hours on preliminary tests, pay being in the field's Caddo lime level from 2,548 to 2,637 ft. follow-

*(Continued on Page 114)*

# Oil Show Found Northeast of Production in Fresno County

By
L. P. STOCKMAN

LOS ANGELES, Calif., May 5.—Shell Oil Co., Inc., focused the attention of operators on the Raisin City district of Fresno County late this week when its wildcat, 8-18 Property, Inc., in 18-15s-18e, showed every indication of being in an oil zone of considerable extent. This wildcat, which is bottomed at 4,754 ft., surprised even the crew when a good looking oil sand was found on the bit which had just been pulled at 4,697 ft. Core recovery was bad and on going back into the hole the crew succeeded in recovering 2 ft. of oil sand at 4,711 ft. Cores above and below this point were lost and so the company does not know just where the top of the oil sand was picked up. An electrical log has since been run in but the data have not been released. Before running the electrical log, the company made a formation test with a packer at 4,697 ft. and open 49 minutes the well showed a good blow of gas for 3 hours and a recovery of 3,625 ft. of badly gas-cut mud and oil. The top 800 ft. was oil testing around 25 gravity. This wildcat was drilled as a no-dope well but within 8 hours the news hit Los Angeles offices and spoiled the week-end holiday of many scouts and land men who immediately began the trek north to Raisin City late Friday afternoon. There was still some unleased acreage within a mile of the well and this property will undoubtedly bring some fancy prices from a bonus standpoint. The well was started as a joint project of Western Gulf Oil Co., Tide Water Associated Oil Co., Shell Oil Co., Inc., General Petroleum Corp. and Seaboard Oil Co. Union Oil Co. probably also contributed some dry-hole money because the well is located within 350 ft. of Union's property line of a 580-acre lease located west of the discovery. This wildcat was drilled on an indicative seismograph survey and while it is a little too early to venture an opinion as to the probable discovery of a new field one can say that the prospects look exceedingly good. It remains to be seen, however, whether there is sufficient amount of oil to make a commercial producing well. This oil sand was found in the Santa Margarita formation of upper Miocene age.




*Tide Water Associated Oil Co. is starting a wildcat south of the southeastern end of the Lost Hills field in Kern County, California, and it is expected that this area will require deep drilling to reach the Vedder zone as it is believed to have been found to the north slightly below 11,000 ft.*

## Fuel-Oil Price Increased

The recent increase of ½ cent per gallon in gasoline and the posting of a 10-cent-per-barrel increase in fuel-oil prices effective April 30, 1941, indicate that marketing companies should show better earnings during 1941 provided existing price structures remain unchanged. It is significant to note, however, that quotations on heavy crude oil are still too low and appear entirely out of line with the demand for this quality of crude oil. The increase brings the price to 85 cents per barrel at Los Angeles Harbor with other ports showing similar changes. This means that there is a differential of 17 cents per barrel between the price of heavy crude oil which is quoted at 68 cents per barrel and the prevailing price of fuel oil. The situation is peculiar because when Standard Oil Co. cut the price of crude oil on February 1, 1940, it stated that, "This reduction is made because of a substantial weakening in fuel-oil prices at the beginning of the year, and the new crude prices reflect this to the extent of the fuel-oil content of the various gravities of crude oil." This means that the heavier grades of crude oil received the largest reduction in prices because they contain a larger amount of fuel-oil residuum. Inversely if this premise was true on February 1, 1940, at the time crude prices were reduced, it should be true now and inasmuch as fuel-oil prices have been raised 10 cents per barrel it is logical to assume that quotations on heavy grades of crude oil should also be increased. Existing prices for heavy crude oil are at least 2 cents per barrel below quotations that existed for several years and are substantially below lifting costs in many cases. Producers of heavy crude oil take the position that the present low price for this grade of crude oil is the result of a disagreement between marketing companies over contracts for fuel oil and not because of any other condition. They feel that the increase in gasoline prices of ½ cent per gallon in gasoline is proper but that the present price of 85 cents per barrel for fuel oil is entirely out of line and that they are being penalized because of this condition. This belief is based on the fact that stocks of heavy crude and fuel oil have been substantially reduced and are still being reduced at a high rate. During the past year stocks of heavy crude oil have been reduced 1,707,525 bbl. which reduced stocks from 13,499,792 bbl. on hand March 31, 1940, to 11,792,267 bbl. on hand March 31, 1941. During the same time fuel-oil stocks have been reduced 8,073,097 bbl. which means that the two com-

## SUMMARY OF COMPLETIONS

| | No. | Bbl. | Footage |
|---|---|---|---|
| Oil wells: San Joaquin Valley | 1 | 25 | 9,446 |
| Coastal district | 4 | 4,591 | 18,679 |
| Los Angeles Basin | 5 | 3,140 | 19,782 |
| Recomp.: Los Angeles Basin | 1 | 50 | .. |
| Dry holes: Wildcat area | 1 | .. | 9,673 |
| Total | 12 | 7,806 | 57,580 |

modities show an aggregate reduction of 9,780,622 bbl. during the past 12 months. Fuel-oil stocks have been reduced from 64,947,259 bbl. on hand March 31, 1940, to 56,874,162 bbl. in storage at the close of March of this year. It is quite obvious to an observer of curtailment that the present plan is failing to show a difference between production and demand of the various grades of crude oil and likewise that marketers are failing to utilize the most favorable crudes to fill requirements. There is very little physical waste in California but the present marketing policies are playing right into the hands of those seeking to control the California oil industry. There is no reason why marketers should not secure a proper price for fuel oil and use the heavy grades of crude oil to supply that demand instead of using light refinable grades that pile up gasoline stocks when used to supply fuel-oil requirements.

## SAN JOAQUIN VALLEY

Operations in the San Joaquin Valley were devoid of any important developments and for the first time in many months the completion list was down to one successful well. This is but a temporary lull, however, and operators may be expected to make up for lost time from now on. This condition is due to the fact that many wells are nearing completion simultaneously and this should result in a much larger completion list at an early date. It is interesting to note in this connection, however, that there is a notable tendency towards a reduction in drilling operations, as had been expected, but a large gain in wildcat activity. This tendency was anticipated several months ago when it became evident after a survey that available suitable locations in proved fields in the San Joaquin Valley were being reduced at a rapid rate. This is due to the fact that new discoveries in that section during the past few years have been relatively few while those found contain large leases that have enabled operators to proceed with development on the basis of one well to 20 acres. Obviously if operators now proceed to develop acreage on a 1-to-10 well spacing, numerous additional locations will be made available. It is not likely, however, that there will be much deviation from the one-well-to-20-acre program in deep fields under present conditions. Ten Section and Southeast Coalinga fields are able to sustain a one-well-to-10-acre program especially in the latter district due to the large thickness of oil sand and high porosity and favorable permeability and consequent expected high ultimate recovery.

## SAN JOAQUIN VALLEY COMPLETIONS

### Cantua District

Texas 27-13 S.P. .....13-17s-15e
Abandoned as not commercially productive after exhaustive series of tests. Showed gas but formation was wet and carried salt water. Elev. 340 ft. T.D. 9,673 ft., P.B. 9,380 ft. 7-in. water string 9,325 ft. Correlated 200 ft. lower structurally than last wildcat drilled in area by Texas Co. Formation tested Domengine of middle or lower Eocene age. Fresno County.

### Coles Levee Field

Standard 20-8 Kern County Land.....5-31s-25e
Flowed on compressor 25 bbl., 39.9-gravity, 40 per cent cut, 723,000 cu. ft. net formation gas. 64/64-in. bean. Pressures 50/350 lb. Elev. 430 ft. T.D. 9,660 ft., P.B. 9,446 ft. 8⅝-in. water string 8,880 ft. 615 ft. 4¾-in. liner 9,450 ft. Perf. 8,870-9,450 ft. 9,443 ft. 2½-in. and 3-in. tubing. Completed in Stevens oil zone. Located ½ mile west of production. Kern County.

## SAN JOAQUIN VALLEY OUTPOSTS

### Elk Hills Field

Standard 42-31-S fee .....31-30s-24e
T.D. 7,981 ft. in shale. Fishing drill pipe. Elev. 1,122 ft. Kern County.
Standard 45-19-S fee .....19-30s-24e
Drilling 4,550 ft. in sand and shale. Elev. 707 ft. Kern County.
Standard 27-19-S fee .....19-30s-24e
Drilling in oil sand 4,056 ft. Making production test. Elev. 808 ft. Kern County.

### Kettleman North Dome Field

Standard 1-1-U fee .....1-23s-16e
Drilling in hard tight oil-stained sand 11,960 ft. Formation test of Eocene 10,860 ft. with packer 10,762 ft., light blow gas with water. Elev. 693 ft. Kings County.

### Midway-Sunset Field

North Amer. Oil Consd. 1-28 W.P. .....28-32s-23e
Drilling 7,140 ft. in very hard shale with streaks of impervious sand. Elev. 1,560 ft. Kern County.

## SAN JOAQUIN VALLEY WILDCATS

### Buena Vista Hills District

Honolulu 25-P fee .....10-32s-24e
Drilling 13,530 ft. in shale with streaks of hard sand showing strong gas characteristics. Objective is Rio Bravo and Vedder zones. Elev. 916 ft. Kern County.

### Buttonwillow District

Texas 47-15 Southern Pacific .....15-29s-24e
T.D. 9,800 ft., drilling in sand and shale. 8⅝-in. cemented 8,932 ft. with 2,000 sacks cement. Elev. 287 ft. Kern County.
Superior Oil Co. 13 Kern County Land.....18-29s-25e
Location staked in SE corner of section. Kern County.

### Bellevue District

Ohio Oil Co. 1-G Kern County Land.....36-29s-26e
Drilling 5,762 ft. in sand and shale. 13 ft. of Chanac oil sand 5,177 ft. Formation test showed good gas blow, recovered 3,900 ft. of salt water. Kern County.
Union 31-3 Kern County Land.....3-30s-26e
Drilling 10,450 ft. in sand and shale. Stevens oil zone absent. Kern County.

### Famosa District

C. C. M. O. Co. 12-1 Famosa .....12-27s-26e
Location staked. General Pet. Corp. and Richfield will contribute some dry-hole money as test will affect their adjacent leases. Kern County.

### Jasmine District

White River Expl. Co. 2 Salca .....8-25s-28e
Drilling 800 ft. in sandy shale. Bender Drilling Co. is contractor. Kern County.

### Lafayette District

Lafayette Oil Co. 1 Morris .....28-1n-2w
T.D. 200 ft. Technical spud to complete final details. Located in Contra Costa County.

### Lost Hills District

Associated 46-16 fee .....16-27s-21e
Derrick erected. Located 1,650 ft. N, 2,310 ft. E from SW cor. 16-27s-21e. Kern County.

### Maricopa District

Bankline Oil Co. 24-24 Sunset .....24-11n-23e
Drilling and coring in shale 3,601 ft., showing 70° dips. Elev. 970 ft. Kern County.

### Pyramid Hills District

Associated 76 West Slope .....20-24s-18e
Drilling and coring in hard shale 1,030 ft. Landed 13⅜-in. surface pipe 129 ft. Kings County.

### Raisin City District

Shell 8-18 Properties, Inc. .....18-15s-18e
Drilling 4,751 ft. in sandy shale. Elev. 204 ft. Fresno County.

### Rio Vista District

Amerada 1 Wilcox .....31-4n-3e
T.D. 4,209 ft. in Cretaceous gas sand. Completed and shut in without test. Sacramento County.
Amerada 1 Kuhn Comm. .....8-3n-3e
Drilling in sandy shale 3,196 ft., 16-in. pipe landed 59 ft. Located on Twitchell Island in Solano County.

### Sacramento District

Portable Drlg. & Equip. Co. 1 Sacramento....35-8n-4e
Drilling 107 ft. in surface sand. Sacramento County.

### Tejon District

Continental 1-A Tejon.....28-11n-19e


SELECT YOUR OWN METHOD OF APPLICATION

**NO-OX-ID Combinations give Pipe Line Protection under any Soil Condition!**

**You'll find there's a NO-OX-ID and NO-OX-IDized Wrapper Combination for every type of application—either hot or cold, by hand, traveling machine, or stationary machine. What's more, these NO-OX-ID Combinations provide pipe line protection under the most corrosive soil conditions.**

**NO-OX-ID Combinations have physical characteristics that prevent soil attachment and mechanically resist the shearing effects of soil action. They are highly resistant to bacterial attack. Their high dielectric strength—and hence their moisture resistance—is retained after continued immersion in water. In addition, active chemical inhibitors in NO-OX-ID render passive any rust spots that may be present when the coating is applied. Thus, NO-OX-ID Combinations provide lasting, four-way protection.**

*Write for questionnaire to get recommended NO-OX-ID specifications.*

**DEARBORN CHEMICAL COMPANY**
**Dept. K, 310 S. Michigan Ave., Chicago, Illinois**

Drilling 2,194 ft. in sand and shale. 11¾-in. surface pipe 503 ft. Elev. 874 ft. Kern County.

Kern Line Oil Co. 1 Tejon ..... 19-11n-19e
T.D. 8,390 ft. Rebuilt rig. Rigged up. Elev. 970 ft. Kern County.

**Shafter District**

Continental 2-G Kern County Land ..... 35-27s-24e
T.D. 11,349 ft. Redrilling 9,960 ft. Two fish in hole. Elev. 986 ft. Kern County.

**Vernalis District**

Standard 2 Blewett Comm. ..... 25-3s-6e
T.D. 4,055 ft. in gas sand. Flowed 6,848,000 cu. ft. on formation test 3,960-4,007 ft. Elev. 62 ft. Gas zone is in Cretaceous. San Joaquin County.

## AVERAGE DAILY PRODUCTION

| | May 3 | April 26 |
|---|---|---|
| Wilmington | 81,950 | 82,615 |
| Long Beach | 41,100 | 41,810 |
| Midway-Sunset | 39,750 | 39,910 |
| Kettleman North Dome | 38,150 | 37,875 |
| Ventura Avenue | 33,625 | 34,975 |
| Coalinga | 27,925 | 31,025 |
| Huntington Beach | 27,415 | 28,825 |
| Santa Fe Springs | 23,550 | 23,600 |
| Dominguez | 21,250 | 20,850 |
| Santa Maria Valley | 17,275 | 18,975 |

## LOS ANGELES BASIN

Drilling operations are showing a rapid increase in the northwest end of the Inglewood field of Los Angeles County and a further gain is anticipated. Usually this occurs soon after the second completion in a new field or new zone and the same thing is expected to take place at Inglewood. To date only one well has been finished in the Miocene in the northwest end of the field but at the close of the current week Jefferson Oil Co. was drilling ahead in 1 Smith and Texas, and Federal Drilling Co. is preparing to start early work as derricks have already been built. R. R. Bush Oil Co. has two derricks standing and both wells will be spudded in shortly. The Rocky Mountain Drilling Co. will drill both of these wells, using rotary drilling equipment which has been moved down from the San Joaquin Valley. Oscar R. Howard has finished rigging up 1 Dominguez and is ready for immediate spud but a deal is on with Jergins Oil Co. and the latter may drill the first well or group of wells. Dana Hogan has location staked but has not yet started rig construction. All of these locations are proved or semiproved. Standard Oil Co., Tide Water Associated Oil Co., Shell Oil Co., Inc., Kettleman & Inglewood Corp. and others holding acreage nearer the center of the field have not yet started development, but will do so within a short time. The restricted area within the corporate limits of Culver City has not yet changed and it appears possible that no action will be taken in the immediate future.

*DOMINGUEZ.*—Leasing activities and drilling operations in the west end of the Dominguez field where Hiles Drilling Co. proved up the existence of commercial production in the seventh Callender zone of Miocene age a few weeks ago have shown a substantial increase. The initial completion of Hiles Drilling Co., 1 Grant, was still flowing 800 bbl. daily at the close of the current week and it is not likely that it will cut back very much as it is flowing through a 38/64-in. bean at present. Walter Crawford and associates have spudded in their first well on the Anna E. Schmeyer property south of the extension well of Hiles Drilling Co. and another operator has taken a lease on the C. F. Johnson property. Golden Bear Oil Co. expects to have a derrick on its Barnes lease within the next 15 days and preparations have been completed whereby Crawford and associates will do the actual drilling. The Busse property has also been leased and plans call for immediate work. Hiles Drilling Co. also has commitments for additional drilling for its own account. The trend of drilling is towards the south and if this first line of wells shows good production later drilling will be to the west. Union Oil Co., holding the Austin lease to the east, has not undertaken offset work and may wait until later as it is not any too enthusiastic because of the thin amount of oil sand present as recovery will be small.

### LOS ANGELES BASIN COMPLETIONS

**Dominguez Field**

Shell 113 Reyes ..... 34-3s-13w
Flowed on gas lift 469 bbl., 28.5-gravity, 3 per cent cut, 603,000 cu. ft. gas. Elev. 200 ft. T.D. 4,265 ft. 5½-in. combination string 4,258 ft. Perf. 3,866-4,015 ft., 4,028-70 ft., 4,080-4,163 ft., 4,177-4,207 ft., 4,217-56 ft. 4,198 ft. 2-in. tubing. Completed in first Callender zone of Pliocene age. 18 days' drilling time. Los Angeles County.

**Huntington Beach Field**

H. C. Morton 2 H.B. ..... 34-5s-11w
Pumped 100 bbl., 23.9-gravity, 7 per cent cut. Elev. 75 ft. T.D. 4,845 ft. 7-in. combination string 4,845 ft. Perf. 4,420-55 ft., 4,700-40 ft. 4,430 ft. 2½-in. tubing. Completed in Miley Keck zone of Pliocene age. 37 days' drilling time. Orange County.

V. R. G. Wilbur 3 Twining ..... 2-6s-11w
Pumped 35 bbl. 25.8-gravity, 35 per cent cut. Elev. 80 ft. T.D. 3,487 ft. 8⅝-in. water string 3,176 ft. 345 ft. 5½-in. gravel-packed liner 3,486 ft. Perf. 3,197-3,225 ft., 3,235-85 ft., 3,295-3,485 ft. 3,175 ft. 2½-in. tubing. Completed in Bolsa zone of Pliocene age. 24 days' drilling time. Orange County.

**Rosecrans Field**

Apex Pet. Corp. 1 Hatfield ..... 20-3s-13w
Pumped 50 bbl., 30.9-gravity, 12 per cent cut. Elev. 62 ft. T.D. 9,214 ft., P.B. 7,560 ft. 7-in. combination string 9,002 ft. Perf. 7,388-7,490 ft., 7,580-7,600 ft. 7,100 ft. 2-in. and 2½-in. tubing. Perforations 7,580-7,600 ft. tested wet. Recompleted in O'Dea zone. Lower part of hole unfavorable. Los Angeles County.

**Wilmington Field**

Port Oil Co. 3 Harbor ..... 29-4s-13w
Pumped 107 bbl., 15.3-gravity, 5 per cent cut. Elev. 47 ft. T.D. 3,710 ft. 8⅝-in. water string 3,039 ft. 700 ft. 5½-in. gravel-packed liner 3,710 ft. Perf. at intervale 3,307-3,710 ft. 3,673 ft. 2½-in. tubing. Completed in Ranger zone of Pliocene age. 18 days' drilling time. Los Angeles County.

Union Pacific R. R. 165 fee ..... 3-5s-13w
Flowed 2,429 bbl., 26.8-gravity, 0.1 per cent cut, 80,000 cu. ft. gas. 48/64-in. bean. Pressures 330/720 lb. Elev. 13 ft. T.D. 3,475 ft. 10¾-in. water string 2,531 ft. 958 ft. 5-in. gravel-packed liner 3,468 ft. Perf. 2,526-98 ft., 2,619-58 ft., 2,678-2,761 ft., 3,025-3,140 ft., 3,180-3,301 ft., 3,324-78 ft., 3,389-3,468 ft. 2,771 ft. 2½-in. tubing with 288 ft. 2-in. on bottom and with lead-seal packer on bottom. Completed in upper and lower Terminal zone. 27 days' drilling time. Los Angeles County.

### LOS ANGELES BASIN OUTPOSTS OR DEEP TESTS

**Dominguez Field**

Union 79 Callender ..... 32-3s-13w
T.D. 12,720 ft. in basement Schist. P.B. 7,490 ft. Swabbing and flowing by heads oil and water. Elev. 82 ft. Los Angeles County.

**Dominguez Extension**

Crawford and associates 1 Schmeyer ..... 29-3s-13w
Drilling in sand and shale 1,294 ft. Los Angeles County.

**Inglewood Field**

Standard 3-1 L.A.I. ..... 17-2s-14w
Drilling and spot coring sand and shale 10,645 ft. Formation Miocene age. Los Angeles County.

R. R. Bush Oil Co. 1 Merchants ..... 7-2s-14w

*(Continued on Page 104)*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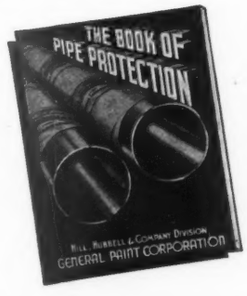


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# Vernon and Adams Wells Best In Disappointing Week

By OTTO C. PRESSPRICH

SAGINAW, Mich., May 5.—A 400-bbl. producer in the old Vernon-Isabella field shared interest with completion of another Adams-Arenac test, fourth on the Yenior lease, which produced initially after acidizing at the rate of 840 bbl. a day, to highlight the past week's development in Michigan oil fields. Other production resulted from completions in Beaverton-Gladwin, Wise-Isabella, Porter-Van Buren, and Tallmadge-Ottawa, total potential from six producer completions being 1,483 bbl. daily.

A preponderance of dry holes—there were 10 listed in the completions record for the week—resulted from failures in six Allegan County tests, two in Van Buren, one in Roscommon, and one in Oceana. The Oceana failure signaled the end of hopes for an oil field in the far western Michigan county which resulted when a good show of oil was recorded at 1,947 ft. in Crystal Township a few months ago. Water was a factor in the failure.

Prospects for testing in deeper formations were being watched in the southwestern part of the state, following on announcement of formation of a Producers Deep Well Corp. in Grand Rapids by Neil Wagonaar. Intending to make the first test below Traverse-Monroe formations, plans are being made for a Walker Township, Kent County, test possibly to the St. Peter sand below 5,000 ft.

Testing was scheduled on a Jonesfield-Saginaw County wildcat on Robert Bond 1 Doehring, in Dundee at 3,328 ft. The test is 7 miles southeast of the Midland Porter field. Gulf Refining Co. was making slow progress on the Bateson deep test in Monitor-Bay, reporting the hole below 6,800 ft., nearly 1,000 ft. from bottom of the original hole, lost last winter by explosion and fire.

Auction May 30, of 30,000 acres of wildcat lands was scheduled by the state Conservation Department. Included is about 70 proven acres in Winterfield-Clare, other acreage in Alpena, Arenac, Gladwin, Lake, Mecosta, Midland, Oceana, Osceola, and Roscommon counties.

The department last week approved 15 oil and gas-drilling-permit applications. Locations are in eight counties—three each in Arenac, Allegan, and Osceola, two in Gladwin, one each in Van Buren, Monroe, Ottawa, and Missaukee. The year's total was increased to 255.

The Michigan Supreme Court last week refused to review its January 6 decision in the Porter royalty-pool case. Thus moving distribution of approximately $1,000,000 in impounded royalties a step nearer, the court rejected an appeal from a decision which reversed a Midland County Circuit Court decision and ruled that the pool was valid.

## • SUMMARY OF COMPLETIONS •

| | No. | Bbl. | Footage |
|---|---|---|---|
| Oil wells: Arenac County | 1 | 840 | 2,891 |
| Gladwin County | 1 | 98 | 3,875 |
| Isabella County | 2 | 500 | 7,482 |
| Ottawa County | 1 | 15 | 1,831 |
| Van Buren County | 1 | 30 | 1,143 |
| Gas wells: Isabella County | 1 | *.606 | 1,396 |
| Dry holes: Allegan County | 5 | | 8,147 |
| Oceana County | 1 | | 1,347 |
| Ottawa County | 1 | | 1,780 |
| Roscommon County | 1 | | 2,047 |
| Van Buren County | 2 | | 2,526 |
| Total | 17 | | 36,115 |

*Million cu. ft.

## AVERAGE DAILY PRODUCTION

| | May 3 | Apr. 26 |
|---|---|---|
| Temple | 7,000 | 7,110 |
| Buckeye | 1,815 | 1,705 |
| Walker | 4,390 | 4,300 |
| Van Buren County | 2,740 | 2,825 |
| Allegan County | 4,520 | 4,605 |
| Wise | 1,100 | 1,195 |
| Adams | 3,705 | 3,570 |
| Total for state | 38,005 | 37,100 |

## MICHIGAN COMPLETIONS

**Allegan County**

Monterey Township: Charles W. Cook 1 Hewitt, SW SE NW 31-3n-13w, dry, T.D. 1,560 ft.
Overisel Township: Kent Drilling Co. 1 Dozeman, NW SW NE 11-4n-14w, dry, T.D. 1,600 ft.
A. E. Kopprasch 1 Klingenberg, SW NE NW Sec. 21, dry, T.D. 1,600 ft.
Salem Township: John McLean 2 Zerfas, NE NE NE 15-4n-13w, dry, T.D. 1,624 ft.
Wayland Township: Muskegon Development Co. 1 Arbanas, SW NE SW 9-3n-11w, dry, T.D. 1,763 ft.

**Arenac County**

Adams Township: Rayburn & Major 4 Yenior, SW SW NE 22-19n-3e, 840 bbl., acid, T.D. 2,891 ft.

**Gladwin County**

Beaverton Township: Sun Oil Co. 2 Goodwin, SW NE NW 36-17n-2w, 98 bbl., acid, T.D. 3,875 ft.

**Oceana County**

Crystal Township: American Drilling Co. 1 Skidmore, SE SW SW 9-16n-16w, dry, T.D. 1,947 ft.

**Isabella County**

Broomfield Township: G. M. Obenauer 1 Lueder, SE SE NE 14-14n-6w, 606,000 cu. ft. gas, T.D. 1,396 ft.
Vernon Township: F. O. Wilkins 4 Herring, NE NW SE 22-16n-4w, 400 bbl., acid, T.D. 3,741 ft.

(Continued on Page 96)

• Two Le Roi RX1SV 12-cylinder engines now in use by Baldridge & King, McAllen, Texas—selected because of the great performance records of previous Le Roi units.

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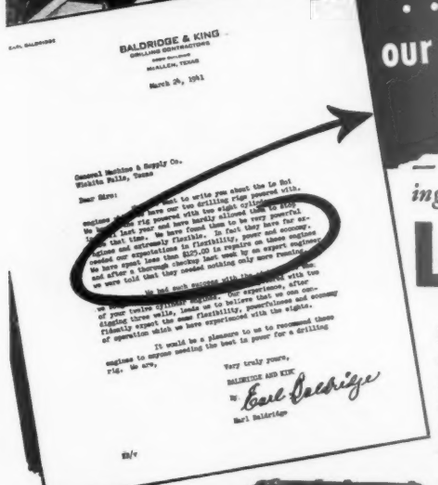


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• Wilson Titan Rig equipped with two Le Roi 12-cylinder engines.

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By
ROBERT INGRAM

# Play Pushes 1½ mi. Northwest Of Tecumseh Lake Discovery

TWO wildcats playing for a northwest trend 1½ miles from Hall-Jordan 1 Whitehead, discovery well of the new Tecumseh Lake pool in W½ SE SW 36-10-3, were announced last week as the play around the discovery well continued at a fast pace and five offsets were drilling. Both wells were on leases assembled by Ernest Lippert of Oklahoma City. One was M. T. Myers et al 1 Johnson-Utter, NE SE NE 34-10-3, and the other was Lippert 1 Rosebush, NE SE SW 34-10-3.

Meantime, Clyde Dorr, who is in charge of Hall-Jordan operations in Oklahoma following the announcement last week that the main office would be moved to Houston, Tex., laid to rest rumors that the discovery well was showing water cutting. Mr. Dorr said the latest test on cutting at week's end showed only 0.4 per cent at the tanks and 0.8 per cent at the separator. Temperature of the oil is 60° to 61°, and bottom-hole pressure is holding at around 1,930 lb. Shut-in pressure on casing is 310 lb. Gas, he said, is holding around 4,000,000 cu. ft. a day and the well was being produced wide open, averaging 109 bbl. an hour for 2 days. At week's end 16,000 bbl. had been taken by Stanolind Pipe Line Co.

And in Oklahoma City, F. C. Hall, president of Hall-Jordan, announced that the company's properties at Tecumseh Lake had been taken off the market and all conversations about a sale had been terminated.

Other wells drilling in the new field were:

Hall-Jordan 2 Whitehead ..... SW SE SW 36-10-3
Drilling 1,100 ft.
Hall-Jordan 1 Pensoneau ..... SE SW SW 36-10-3
Drilling 2,225 ft.
Hall-Jordan 1 Blain ..... NE NW NW 1-9-3
Set surface pipe.
Phillips 1 Luttrell ..... NW NE NW 1-9-3
Drilling 3,350 ft.
Phillips 2 Luttrell ..... NE NE NW 1-9-3
First report.
Gulf 1 Dixon ..... SE NW SW 36-10-3
Drilling 3,325 ft.

### SUMMARY OF COMPLETIONS

| | No. | Bbl. | Footage |
|---|---|---|---|
| Oil wells: Fields | 24 | 6,300 | 60,060 |
| Wildcats | 1 | 23 | 4,282 |
| Gas wells: Fields | 5 | *32 | 11,349 |
| Dry holes: Fields | 2 | ..... | 6,816 |
| Wildcats | 4 | ..... | 17,195 |
| Total | 36 | ..... | 99,702 |
| Recompletions | 2 | 6 | ..... |

*Million cu. ft.

**Deep Production Is Opened From Simpson at Velma**

Close on the heels of the major strike at Tecumseh Lake west of the Greater Seminole area in Pottawatomie County came the discovery this week of deep production in the Velma pool of Stephens County where Pennsylvanian sands from 400 to 1,100 ft. have been producing since 1917. Previously the pool had been tested to as deep as 4,000 ft., but this year, in line with the search throughout Oklahoma for new reserves, Skelly Oil Co. started a test to the Arbuckle in 4 Robberson, NE NE 35-1s-5w, which at the first of the week was assured of opening production in the Simpson sand.

The well topped the second Simpson at 7,142 ft. and was drilled to a total depth of 7,194 ft. A drill-stem test was taken with the packer set at 7,142 ft. After 3 minutes, it started making gas; after 11 minutes mud started flowing and in 13 minutes a light, brown oil, estimated at 35 gravity, began flowing. It flowed steadily for 25 minutes and then was shut in. Gas flow was estimated at 3,000,000 cu. ft.

After the test was taken, operators drilled ahead to test the base of the Simpson but will plug back to the horizon tested this week if the deep section does not pay. Nearest deep production in the area is about 8 miles southeast at Milroy from oolitic lime of the Ordovician at 7,800-7,900 ft. The structures at Velma and Milroy, however, are not related but are distinctly individual. Operators said no correlation was possible with any other deep wells in the county because of the sharp definition of structures and the steep dips.

**Nomenclature Committee Names Five New Discoveries**

Five new pools, opened since the first of the year, were named at a meeting of the Oklahoma nomenclature committee of the Mid-Continent Oil and Gas Association. They were:

Hilltop pool, opened by Magnolia Petroleum 1 McKoy heirs, SW SW SE 15-5-11, which made 10,750,000 cu. ft. of gas from the Cromwell at 5,341-5,424 ft., gaged March 13.

West Fish pool, opened by Weldon Hall 1-A Jackson, N½ NE SE 14-7-7, which pumped 44 bbl. from the Booch sand at 3,168-92 ft., gaged March 13.

Castle pool, opened by K.G.F.F. Oil Co. 1 Camp, SW SW SW 6-11-9, which flowed 250 bbl. from the Hunton lime at 3,914 ft., gaged April 4.

North St. Louis pool, opened by Amerada 1 Peters, SW NW SE 27-8-4, flowed 512 bbl. from the Hunton lime at 3,868 ft., gaged April 28.

South Maud pool, opened by Kerlyn 1 Cherry, SE NE NW 22-8-5, which pumped 181 bbl. of oil and 77 bbl. of water from the Calvin sand at 4,320-25 ft., gaged February 18.

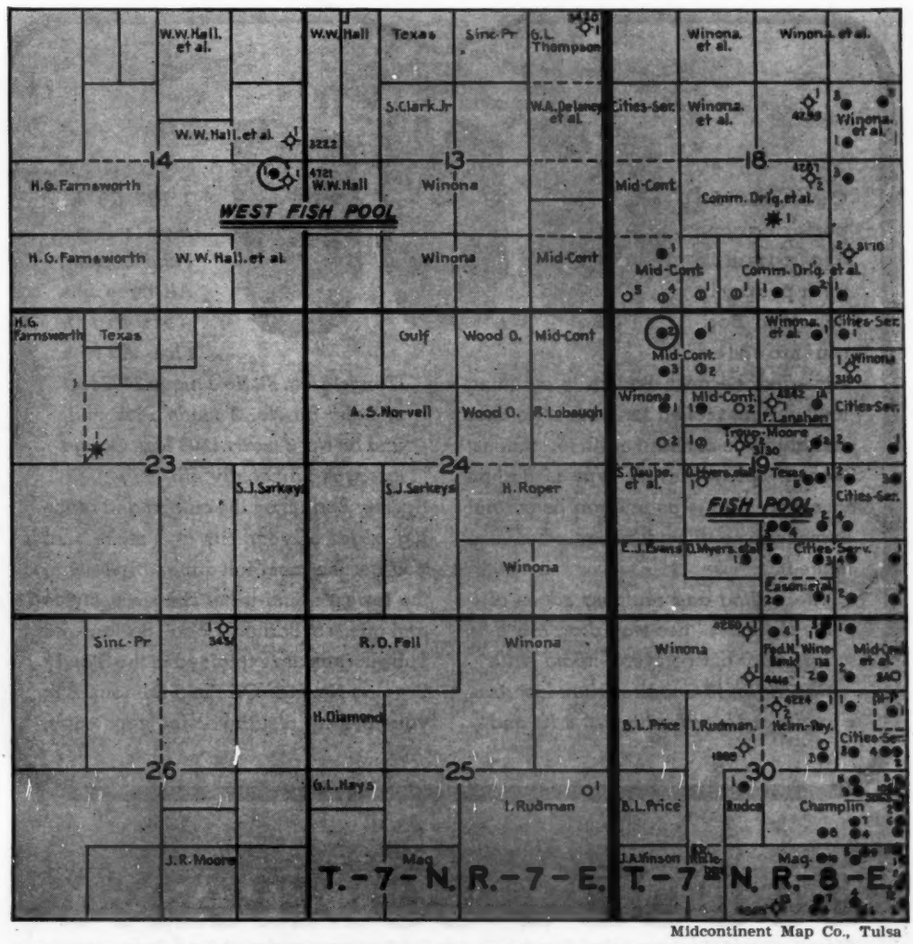
**Three Wells in Sand At New Guthrie Pool**

Three wells offsetting the discovery well of the Guthrie pool in Logan County were setting casing at week's end in the second Wilcox zone which showed rich saturation. They were:

Continental 1 Donoghue A ..... NE NE SW 7-17-1w
Sand 5,459 ft., drilled to 5,467 ft. and was reconditioning the hole to run an electrical-log survey.
W. C. McBride 1 Eastwood ..... NE NW SW 7-17-1w
Sand 5,449 ft., cored full recovery of saturated sand from 5,447-56 ft. and was running electrical survey.
Sinclair Prairie 1 Sults ..... SW SW NE 7-17-1w
Sand at 5,450 ft., coring.

Sunray 2 Donoghue was rigging up in NW NW SE 7-17-1w, and it was reported in Guthrie that Tom Berry had staked 1-A Howland, SW SW NW 8-17-1w, ½ mile due east of the Sinclair Prairie 1 Sults.

Meantime, a mile south of the discovery well, North American 1 Hirzel, NE NW SE 17-17-1w, was drilling




Midcontinent Map Co., Tulsa

*Calvin sand play in the Fish pool and the discovery of the West Fish pool nearby have set off an active drilling campaign in the eastern part of Seminole County. Discovery well of the West Fish pool was W. W. Hall 1-A Jackson, circled above in 14-7-7, and the Calvin sand discovery at Fish was Mid-Continent 2 Fish, circled in 19-7-8*

below 4,285 ft., and ¾ mile west of this location Big Chief 1 Trim, NE NE SE 13-17-1w, was due to spud.

### DISCOVERIES GAGED

Magnolia 1 Davis, SW SE NE 16-8-8, pumped 23 bbl. oil and 10 bbl. water, old well drilled deeper from 3,235 to 4,282 ft., 5-in. 4,105 ft., acid, Wilcox 4,218 ft., Seminole County.

### WILDCATS PLUGGED

16-3-1, E½ NE SE ..... Stanolind 1 Little Dry, T.D. 4,866 ft., Oil Creek 4,045 ft., Arbuckle 4,590 ft.

16-12-10, NE NW SW ..... Weimer 1 Williams Dry, T.D. 3,774 ft., water in Hunton 3,573 ft., and in Wilcox 3,769 ft., Okfuskee County.

23-16-3, NW SE ..... Helmerich & Payne 1 Hennessey Dry, T.D. 4,873 ft., first Wilcox 4,799 ft., second Wilcox 4,850 ft.

29-28-1w, NE NW NE ...Helmerich & Payne 1 Geiger Dry, T.D. 3,682 ft., second Wilcox 3,587 ft., Arbuckle 3,465-82 ft., D.S. test 3,648-73 ft., recovered mud, cored dolomite and green shale 3,673-82 ft.

### FIELD DRILLING COMPLETED

Ada, Pontotoc County: Deep Rock 2 Whitaker, NE NW SE 31-4-6, 1,500,000 cu. ft. gas, T.D. 1,239 ft., sand 1,235-38 ft., 5-in. 1,230 ft.

Altus, Jackson County: Burnham 10 Hensley, NE SE NW 10-1-20w, pumped 90 bbl. in 18 hr., 3-in. 1,396 ft., T.D. 1,580 ft.

North Bristow, Creek County: Tilley 7 Wright, SW SE NE 17-17-8, old well drilled deeper from 2,417 ft. to Bartlesville at 2,832-2,900 ft., dry.

Cushing, Creek County: Forcum 4 Gabriel, NE SE 23-19-7, pumped 56 bbl., 6-in. 2,634 ft., sand 2,634-84 ft., shot 2,640-70 ft., T.D. 2,686 ft.

Deep Fork, Creek County: Tibbens 5 Wilson, SW NW SE 18-14-9, dry, T.D. 2,406 ft., Prue 2,370 ft., 6-in. 2,370 ft.

West Duncan, Stephens County: Cities Service 6 Cantrell, SW SE SE 32-1s-8w, old well drilled deeper from 2,242 ft. to 2,258 ft., pumped 3 bbl. oil and 30 bbl. water.

Fish, Seminole County: Mid-Continent 2 Fish, SW NE NW 19-7-8, pumped 210 bbl., Calvin 1,355-69 ft., lower Calvin 1,472-80 ft., 5-in. 1,473 ft., shot 1,480-1,513 ft., T.D.

West Francis, Pontotoc County: Morrison 3-A Kroeger, SE NW 25-5-6, 10,000,000 cu. ft. gas, 500 lb. R.P., sand 1,580-1,600 ft., sand 2,030-40 ft., T.D. 2,110 ft., P.B. 2,040 ft., 5-in. 2,040 ft., rip casing 1,590-91 ft.

Norville 1 Threlkeld, NW NW 25-5-6, 15,000,000 cu. ft., Woodford 2,698 ft., T.D. 2,720 ft., 5½-in. 1,953 ft., perf. 1,903-12 ft.

Hewitt, Carter County: O'Conner 2 Patterson, NW SE SW 21-4s-2w, pumped 5 bbl. in 2½ hr., 7-in. 2,361 ft., T.D. 2,428 ft., P.B. 2,408 ft., shot 2,372-95 ft.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## AVERAGE DAILY PRODUCTION

### LEADING OKLAHOMA FIELDS

| | May 3 | Apr. 26 |
|---|---|---|
| Allen | 4,750 | 4,750 |
| Billings | 6,200 | 6,225 |
| Burbank | 7,700 | 7,675 |
| South Burbank | 7,575 | 7,600 |
| Balance Osage | 17,150 | 17,300 |
| Blackwell district | 3,650 | 3,600 |
| Bristow-Slick | 6,375 | 6,425 |
| Chandler | 950 | 1,000 |
| Crescent | 1,825 | 1,800 |
| East Cromwell | 3,150 | 3,175 |
| Cromwell | 2,900 | 2,925 |
| Cumberland | 6,450 | 6,500 |
| Cushing-Shamrock | 9,050 | 9,075 |
| Dill | 7,125 | 7,150 |
| Duncan | 3,500 | 3,650 |
| Edmond | 3,425 | 3,425 |
| Fish | 2,800 | 2,825 |
| Fitts | 12,800 | 12,850 |
| Jesse | 2,000 | 2,025 |
| Graham-Fox | 2,200 | 2,200 |
| Healdton | 8,525 | 8,550 |
| Hewitt | 9,150 | 9,200 |
| Keokuk | 2,750 | 2,775 |
| Konawa | 1,025 | 1,025 |
| Lucien | 5,650 | 5,650 |
| Moore | 900 | 925 |
| Northeastern counties | 17,150 | 17,100 |
| Oklahoma City | 92,275 | 88,900 |
| Olympic | 1,725 | 1,725 |
| Ramsey | 3,600 | 3,600 |
| Sasakwa | 1,275 | 1,300 |
| Sholem-Alechem | 2,450 | 2,450 |
| Seminole district: | | |
| Bowlegs | 6,275 | 6,275 |
| Carr City | 2,200 | 2,200 |
| Dora | 1,250 | 1,250 |
| Earlsboro | 4,000 | 4,025 |
| East Earlsboro | 1,725 | 1,725 |
| South Earlsboro | 450 | 450 |
| Little River | 6,275 | 6,275 |
| East Little River | 650 | 650 |
| Mission | 1,375 | 1,375 |
| Seminole | 6,450 | 6,450 |
| East Seminole | 950 | 975 |
| Searight | 1,750 | 1,775 |
| Total Seminole | 33,350 | 33,425 |
| St. Louis-Pearson | 19,500 | 19,650 |
| Tatums-Tussy | 5,500 | 5,550 |
| Tonkawa-Garber-Thomas | 3,550 | 3,575 |
| Wewoka | 1,650 | 1,675 |
| Yale-Jennings | 3,325 | 3,350 |
| Total Oklahoma | 413,900 | 415,075 |

West Hewitt, Carter County: Smith 7 Ward, SW SE SE 18-4s-2w, pumped 40 bbl., 7-in. 2,176 ft., T.D. 2,265 ft., shot.

Smith 8 Ward, SE SE 18-4s-2w, flowed 902 bbl., sand 2,028-89 ft., T.D. 7-in. 2,028 ft.

Smith 9 Ward, SW SE SE 18-4s-2w, location abandoned.

Smith 3 Ward, CNL NE 19-4s-2w, location abandoned.

Smith 10 Ward, NE NE 19-4s-2w, flowed 790 bbl., sand 2,022-48 ft., 7-in. 2,021 ft., T.D. 2,102 ft.

Smith 11 Ward, NE NE 19-4s-2w, flowed 799 bbl., sand 1,994-2,015 ft., T.D. 2,055 ft.

Smith 12 Ward, E½ NE NE 19-4s-2w, flowed 396 bbl. in 12 hr., 7-in. 2,007 ft., T.D. 2,071 ft.

Smith 13 Ward, SE NE NE 19-4s-2w, flowed 650 bbl., limestone 2,042-47 ft., sand 2,047-67 ft., 7-in. 2,045 ft., T.D. 2,109 ft.

Smith 14 Ward, SE NE NE 19-4s-2w, flowed 720 bbl., sand 2,064-2,118 ft., T.D. 2,119 ft., 7-in. 2,061 ft.

Tide Water 1 Ward, NE SE NE 19-4s-2w, flowed 350 bbl. in 12 hr., 6-in. 2,112 ft., sand 2,115-48 ft., T.D. 2,200 ft.

Dixon 6 Woodworth, SE NW NW 20-4s-2w, flowed 84 bbl. in 3 hr., T.D. 2,064 ft., 7-in. 2,064 ft., perf. 1,930-2,026 ft.

Knox, Grady County: McCasland 1-A Kearns, SE NW SE 21-3-5w, pumped 40 bbl., 7-in. 2,355 ft., shot 2,364-91 ft., T.D.

Lamont, Grant County: Reda Pump 3 Booher, E½ NW SW 16-25-3w, pumped 556 bbl. oil and 3,980 bbl. water, dolomite 5,363 ft., Wilcox 5,403 ft., 7-in. 5,404 ft., T.D. 5,418 ft., H.F.W., cemented Wilcox, perf. 5,388-5,398 ft., acid.

West Little River, Seminole County: Smith 2 Smith A, SE NW NE 20-7-6, pumped 16 bbl. oil and 15 bbl. water, 5-in. 2,373 ft., Calvin 2,373-99 ft. T.D., shot 2,384-99 ft.

Loco, Stephens County: Pace 1 Armstrong, SW SE SW 12-3s-5w, pumped 15 bbl., sand 924-27 ft., 7-in. 924 ft., lime 933-42 ft. T.D.

Polo, Noble County: Stanolind 4 Voss, NE SE 28-22-2w, old well P.B. from 4,880-3,771 ft., perf. and ripped Layton 3,716-55 ft., dry, drilled deeper to 3,802 ft., rip 3,760-90 ft., pumped 3 bbl. oil and 97 bbl. water.

West Seminole, Seminole County: Amerada 1 Vulgamore, S½ NW SE 30-9-6, pumped 50 bbl., 7-in. 4,049 ft., Viola 4,162 ft., dense 4,218 ft., Wilcox 4,295 ft., T.D. 4,311 ft.

St. Louis, Pottawatomie County: Commercial 2 Bray-McCully, NE SW SE 6-7-4, flowed 250 bbl., Hunton chert 3,922 ft., Hunton 3,925 ft., 7-in. 3,924 ft., T.D. 3,958 ft.

Burns 1 Owens, SE NW SE 30-7-4, dry, Earlsboro 3,629-40 ft., second Wilcox 4,410 ft., 7-in. 4,435 ft.

North Tibbets, Creek County: Springer 1 Colbert, NE SW SW 20-15-9, pumped 50 bbl. oil and 10 bbl. water, Viola 3,605 ft., Wilcox 3,648 ft., 5-in. 3,612 ft., T.D. 3,674 ft., shot 3,648-72 ft.

Terlton, Pawnee County: Johnson 13 Mann, NW NE SW 23-20-7, 3,000,000 cu. ft. gas, 6-in. 2,576 ft., sand 2,604-50 ft.

Tussy, Garvin County: Cox 3 Parton, NW SE SE 29-1-3w, pumped 66 bbl., cored oil sand 2,008-58 ft., T.D. 2,070 ft., 7-in. 1,900 ft.

Cox 6 Pate, NW SE SW 29-1-3w, pumped 65 bbl. T.D. 2,565 ft., 7-in. 2,400 ft.

Cox 9 Pate, SE NW SW 29-1-3w, pumped 70 bbl., T.D. 2,750 ft., P.B. 2,488 ft., 7-in. 2,220 ft.

Weleetka, Okfuskee County: Doak 5 Lowe, SW SE NE 16-10-11, 2,500,000 cu. ft. gas, 6-in. 2,544 ft., sand 2,593-97 ft., T.D. 2,630 ft.

Wewoka, Seminole County: Armstrong 1-A Casey, SE NE 31-8-8, pumped 30 bbl., 29 gravity, sand 1,915-22, ft., show oil and gas, sand 2,269 ft., electric

*(Continued on Page 112)*

By
ROBERT INGRAM

# Mid-West Demand For Crude Favors Kansas Possibilities

LAST week, Kansas' daily average production was estimated at 209,000 bbl., well below the 217,900-bbl. daily allowable set by the state Corporation Commission for May but not down enough to mark any change in the steady upward trend of the past few months. At the same time T. A. Morgan, oil conservation director, again declared that crude purchasers were seeking more and more Kansas crude each week and map companies reported the demand for lease and production maps was at a new high.

These signs of the growing favor with which oil men are looking on Kansas were explained partly by the success of wildcatting in Stafford, Russell, Pratt, Cowley, Ellsworth, Barton, Ellis, and Rice counties, but more by the supply of accessible crude in the midwestern region. First clear statement of the crude supply situation was carried in a United Press dispatch from Tulsa last week attributed to "usually well-informed quarters."

These sources, unidentified in the story, were quoted as saying the "crude-oil storage is rapidly coming nearer to the 'critical' stage." It was pointed out that Oklahoma took six fields off proration in April and 13 more last week, and there was little question that a complete lifting of restrictions would provide only a temporary increase which in the long run might prove harmful.

Meantime, estimates of what Kansas could produce if proration were lifted entirely gave the state at best a total of 350,000 bbl. a day, about 135,000 bbl. more than the average daily runs at present. Since Illinois production had leveled off at about 325,000 bbl. daily, the only hope for an appreciable gain in production seemed to lie in the opening of new drillable locations in the Midwest and Kansas seemed to have a fortunately large supply of these which were attracting operators from several states.

The only possible development which might slow down Kansas development in the near future was that widespread searching for new oil areas—in the Dakotas, Nebraska, the Oklahoma Panhandle, West Virginia, and the Deep South—might open another prolific area like Illinois, East Texas, or Seminole, which would flood the market. Deep drilling, another possible avenue for opening new crude supplies, was considered too expensive to offer a threat to the Kansas operator.

### New Gas Well in Northeastern Pratt County Makes Good Flow

Industrial demand for gas in Kansas and Missouri lent greater importance to a new gas discovery in northern Pratt County last week than usual. The new field was opened by George Reeves 1 Stark, W½ SW NW 18-26-11w, 8 miles northwest of the Cunningham oil and gas pool. Reeves had drilled to the Arbuckle dolomite in search of oil, but found the deeper formation dry and plugged back to 4,154 ft. in the Viola lime.

Top of the Viola was 4,122 ft. and 7-in. pipe was set at 4,123 ft. After being treated with 1,200 gal. of acid solution, the well started flowing an estimated 12,000,000 cu. ft. of gas a day, gaging 1,200-lb. casing-head pressure. At week's end it was shut in for completion. The new pay is far out on the southwest flank of the Barton arch, or Central Kansas uplift, and is in a relatively undeveloped area.

### Dubuque Pool Extended North: Shallow Pay Found Near Howard

Probable new production was found last week on the west edge of the town of Howard in central Elk County, 1½ miles southeast of the Morrow pool, and in Russell County, ½ mile north of the Dubuque pool. The new production in Elk County was indicated in Frank Wahn 1 Russell, SE NE 2-30-10e, which had oil rising 75 ft. in the hole in 4 hours from the Kansas City lime basal play at 1,360-66 ft. The Kansas City series was topped at 1,168 ft. Operators took a gravity test of the oil, which was reported as 37.3°, and then shut down to install a new drilling line.

The new Russell County pay was apparently an extension to the Dubuque pool. It was opened by I. W. Murfin 1 Janne, S½ SW SE 27-15-12w, which was given a potential of 120 bbl. a day after acid treatment. Production came from the Lansing-Kansas City lime series at a total depth of 3,190 ft.

## SUMMARY OF COMPLETIONS

| | No. | Bbl. | Footage |
|---|---|---|---|
| Oil wells: Fields | 32 | 39,069 | 98,573 |
| Gas wells: Fields | 1 | *8.25 | 2,632 |
| Dry holes: Fields | 9 | ..... | 29,306 |
| Wildcats | 4 | ..... | 13,978 |
| Total | 46 | ..... | 144,489 |
| ***Forest City Basin*** | | | |
| Oil wells: Fields | 1 | 249 | 2,285 |
| Dry holes: Wildcats | 3 | ..... | 8,449 |
| Total | 4 | ..... | 10,734 |

*Million cu. ft.

## AVERAGE DAILY PRODUCTION
### LEADING KANSAS FIELDS

| | May 3 | Apr. 26 |
|---|---|---|
| Augusta | 1,250 | 1,150 |
| Bemis-Shutts | 10,650 | 9,850 |
| Bloomer | 4,700 | 4,900 |
| Burnett | 7,100 | 6,900 |
| Burrton | 7,450 | 7,500 |
| Chase | 5,550 | 4,450 |
| Elbing | 1,100 | 1,000 |
| El Dorado-Towanda | 7,050 | 7,050 |
| Geneseo | 4,100 | 4,700 |
| Graber | 2,550 | 2,500 |
| Greenwood County | 8,750 | 8,800 |
| Hollow-Nikkel | 1,350 | 1,400 |
| Keesling | 1,250 | 1,250 |
| Lerado | 400 | 650 |
| Lorraine | 1,450 | 1,600 |
| Oxford | 700 | 650 |
| Rainbow Bend | 900 | 950 |
| Raymond | 850 | 1,000 |
| Ritz-Canton | 3,700 | 3,700 |
| Trapp | 20,000 | 14,250 |
| Balance Russell County | 20,350 | 22,300 |
| Sedgwick County | 3,150 | 3,150 |
| Voshell | 1,700 | 1,750 |
| Silica | 16,500 | 16,400 |
| Wellington | 1,100 | 1,100 |
| Wherry | 2,500 | 3,750 |
| Zenith | 8,350 | 8,800 |
| Others | 64,600 | 71,900 |
| Total | 209,100 | 213,400 |

### WILDCATS PLUGGED

35-1-21w, NE NW. Barnsdall 1 Rumsey T.D. 3,810 ft., Arbuckle 3,752 ft., Norton County.
3-32-8e, NE SW NW. Aladdin 1 Westerfield T.D. 3,119 ft., Arbuckle 3,087 ft., Chautauqua County.
8-22-8w, E½ NE SE. Hess & Son 1 McKee T.D. 3,705 ft., Kinderhook 3,505 ft., Reno County.
26-13-15w, E½ SE NE. Wakefield 1-A Cook T.D. 3,344 ft., show oil 3,333-41 ft., Sooy 3,319 ft., Arbuckle 3,331 ft., Russell County.

### FIELD DRILLING COMPLETED

Augusta, Butler County: Magnolia 14 Kramer, NE SE NW 28-27-4e, old well drilled deeper from 2,005 ft. to 2,326 ft., Arbuckle 2,318 ft., est. 25 bbl. oil and some water.
Ainsworth, Barton County: Continental 1 Stoskopf, SE NW SW 28-16-13w, pumped 539 bbl., Arbuckle 3,391-3,403 ft. T.D., 7-in. 3,392 ft., acid.
Bemis, Ellis County: Cities Service 22 Collahan-A, W½ SE NE 24-11-17w, pumped 3,000 bbl., Arbuckle 3,395-3,400 ft. T.D., 5-in. 3,396 ft., acid.
West Bemis, Ellis County: Champlin 9 Hadley-D, S½ NW SE 17-11-17w, pumped 3,000 bbl., Arbuckle 3,379-93 ft. T.D., 4-in. 3,381 ft.
Big Creek, Russell County: Phillips 1 Amos, E½ SE SW 23-14-15w, pumped 2,850 bbl., Arbuckle 3,209-12 ft. T.D., 5-in. 3,209 ft., acid.
Lindas 1 Boxberger, E½ SE SW 24-14-15w, pumped 1,763 bbl., Arbuckle 3,182-86 ft. T.D., 4-in. 3,181 ft., acid.
South Big Creek, Russell County: Carlock et al 1 Mitchell, E½ NE SW 6-15-14w, pumped 202 bbl., Lansing 2,965-71 ft., 7-in. 2,951 ft., acid.
Blue Hill, Ellis County: Hall 10 Oswald, SW NE SW 11-12-16w, pumped 2,333 bbl., Lansing 3,092-97 ft. T.D., 7-in. 3,080 ft., acid.
Hall 13 Oswald-B, SW NW SE 11-12-16w, location abandoned.
Brandt, Butler County: Adair & Morton 3 Ramp, SE NW NW 23-28-7e, potential 119 bbl. oil and 10 bbl. water, Mississippi lime 2,705-37 ft., T.D., 2,737 ft., 7-in. 2,705 ft., acid.
Breford, Barton County: Champlin 1 Burmeister, E½ NE NW 13-17-11w, pumped 1,613 bbl., Arbuckle 3,336-51 ft. T.D., 7-in. 3,342 ft.
Bunker Hill, Russell County: Seeley & Shaffer 1-A Shaffer, SW SW SE 30-13-12w, dry, T.D. 3,360 ft., Arbuckle 3,353 ft., 5-in. 3,326 ft.
Burnett, Ellis County: Phillips 3 Carmichael, S½ SE SE 11-11-18w, pumped 3,000 bbl., Arbuckle 3,367-72 ft. T.D., 4-in. 3,367 ft., acid.
Chase, Rice County: McPherson 2 Patton-B, NE SW SW 9-19-9w, pumped 3,000 bbl., Arbuckle 3,237-39 ft. T.D., 5-in. 3,237 ft.
Cunningham, Kingman County: Skelly 2 Miller, NW NW NW 31-27-10w, flowed 664 bbl., Lansing 3,444-3,500 ft. T.D., 5-in. 3,446 ft., acid.
Demalorie-Souder, Greenwood County: Phillips 83 Demalorie-Souder, SE SW SW 2-22-10e, pumped 100 bbl., Bartlesville 2,092-2,122 ft., T.D. 2,131 ft., 5-in. 2,075 ft., shot.
Eckel, Butler County: Johnson et al 1 Lindley, SE SW SW 6-27-7e, dry, T.D. 2,230 ft., Kansas City lime 2,090 ft.
Eldorado, Butler County: Deep Rock 8 Hills, N½ NW NW 32-26-5e, pumped 15 bbl. oil and 8 bbl. water, Viola 2,623 ft., T.D. 2,632½ ft., 7-in. 2,620 ft.
Emmeran, Ellis County: Bridgeport Machine 3 Frolich, E½ SW SE 4-13-16w, pumped 676 bbl., Lansing 3,259-60 ft. and 3,263-65 ft. T.D., 7-in. 3,230 ft., acid.
Fairport, Russell County: Liggett 2 Durham-B, NW SE NE 20-11-15w, old well drilled deeper from 3,200 ft. to 3,346 ft., sand, pumped 40 bbl. oil and some water.
Gas area, Grant County: Depositors Royalty 1 Henthorn, SW SE NW 15-28-37w, 8,520,000 cu. ft. gas, Ft. Riley 2,406-2,632 ft. T.D., 7-in. 2,376 ft.
Geneseo, Rice County: Continental 9 Meyer, SE NW SW 30-18-7w, pumped 3,000 bbl., Arbuckle 3,172-3,210 ft. T.D., 6-in. 3,173 ft., acid.
Continental 5 Gibson, SE NE SW 24-18-8w, pumped 1,713 bbl., Arbuckle 3,173-90 ft. T.D., 6-in. 3,174 ft., acid.
Gorham, Russell County: Phillips 3 Amelia, S½ NW SW 6-14-14w, dry, T.D. 3,338½ ft., Gorham sand 3,324 ft., 7-in. 3,324 ft.
Hall-Gurney, Russell County: Cities Service 1 Opdycke, S½ NE NW 29-14-13w, dry, T.D. 3,252 ft., Lansing 2,899 ft., granite wash 3,219 ft.
Skelly 4 Hickey, S½ SW NW 30-14-13w, pumped 477 bbl. oil and 57 bbl. water, Lansing 2,898 ft., pay zone 2,920-99 ft. T.D., 6-in. 2,919 ft., acid.
Phil-Han et al 2 Michel, E½ NE SW 36-14-14w, pumped 996 bbl., pay zone 2,916-36 ft., Lansing 2,880 ft., T.D. 3,136 ft., 5-in. 3,068 ft., acid.
Keesling, Rice County: Davis 3 Anna, N½ NE SW 10-20-9w, pumped 250 bbl., Arbuckle 3,218-26 ft., T.D. 3,230½ ft., 5-in. 3,208 ft., acid and shot.
Kraft, Barton County: Derby Oil 5 Frees, SE SE NE 3-17-11w, pumped 972 bbl. oil and 8 per cent water, Arbuckle 3,358-69 ft., T.D., 4-in. 3,359 ft., acid.
Skelly 2 Disque, N½ NW NE 9-17-11w, pumped 392 bbl., Arbuckle 3,296-3,310 ft., T.D., 4-in. 3,297 ft., acid.
Lanterman, Barton County: Lario 2 Rehme, SE SE SW 15-19-11w, old well drilled deeper from 3,114½ ft. to 3,134½ ft., Lansing, perf. 3,134½ ft., 753 bbl.
Lost Springs, Marion County: Rex & Morris 1-A Hauser, W½ NW NE 33-17-4e, pumped 631 bbl., Mississippi lime 2,426 ft., T.D. 2,432½ ft., 7-in. 2,425 ft.
Ring-Mac 5 Schick, SW NW NW 33-17-4e, pumped 418 bbl., Mississippi lime 2,392 ft., T.D. 2,413 ft., 5-in. 2,397 ft.
Marshall, Ellis County: Amerada 3 Hadley, E½ SE NE 31-11-17w, pumped 235 bbl., Arbuckle 3,641-54 ft., T.D., 5-in. 3,642 ft., acid.
Potwin, Butler County: Ramsey 1-B Wilkinson, NE NE SW 25-24-3e, dry, T.D. 2,835 ft., Mississippi lime 2,745 ft., 6-in. 2,745 ft.
Rutter, Sumner County: N½ SW NW 21-33-2e, pumped 15 bbl., Mississippi lime 3,244-66 ft., T.D., 7-in. 3,226 ft.
St. John, Stafford County: Continental 2 Keller, SE SE NE 22-24-13w, dry, T.D. 4,136 ft., Arbuckle 4,127 ft.
Severy, Greenwood County: Bay 6 Adams, SW SE SW NE 17-28-11e, pumped 70 bbl., Kansas City lime 1,109-1,220 ft., T.D., 5-in. 1,219 ft., acid.
Silica, Barton County: Stanolind 2 Esern, E½ SE SW 3-20-11w, dry, T.D. 3,323 ft., Arbuckle 3,307 ft.
West Silica, Barton County: Cities Service 2 Schlessiger, W½ SE SE 13-20-12w, dry, T.D. 3,400 ft., Arbuckle 3,387 ft.
Sittner, Stafford County: Stanolind 2 Walker, S½ NW SW 33-21-12w, pumped 98 bbl. oil and 19 per cent water, Arbuckle 3,645-49 ft., T.D., 5-in. 3,645 ft., acid.
South Sittner, Stafford County: Stanolind 9 Siefkes, S½ NE SE 3-22-12w, dry, T.D. 3,658 ft., Arbuckle 3,631 ft., 5-in. 3,631 ft.
South Snider, Stafford County: Cities Service 6 Smith-B, SW SE SW 16-21-11w, dry, T.D. 3,445 ft., Arbuckle 3,443 ft.
Trapp, Russell County: Shell 6 Sellens, NE NE SW 33-15-13w, pumped 3,000 bbl., Arbuckle 3,346-50 ft., T.D., 4-in. 3,347 ft., acid.
Virgil, Greenwood County: Rhodes et al 3 Long, NW SE NE 17-23-13e, pumped 3 bbl. oil and some water, Mississippi lime 1,765 ft., T.D. 1,774 ft., 6-in. 1,757 ft., acid.
Zenith, Stafford County: Transwestern 1 McNickle, N½ NW SW 1-24-11w, pumped 925 bbl., Viola

3,706-43 ft., T.D., 5-in. 3,710 ft., acid.
Phillips 4 Tretbar, N½ NE NW 12-24-11w, flowed 3,000 bbl., Misener 3,690-3,703 ft. and Viola 3,735-39 ft., T.D. 3,742 ft., 5-in. 3,707 ft., acid.
E. H. Moore 3 Johnson, SW NE NE 13-24-11w, old well drilled deeper from 3,786 ft. to 3,810 ft., Viola 3,784 ft., pumped 1,196 bbl.

### WILDCATS DRILLING

28-7-24w, S½ SW SE ..... Shields 1 Waggle
First report, Graham County.
27-8-32w, E½ NE SE ..... Billings 1 Ryan
H.F.W. 4,373 ft., underreaming 6-in., Thomas County.
31-9-17w, W½ NW SE ..... Kerlyn 1 Francis
Anhydrite 1,385 ft., Fort Riley 2,125 ft., Neva 2,460 ft., drilling 2,875 ft., Rooks County.
5-12-16w, NE SE SE ..... Cities Service 1 Jantzen
Anhydrite 1,060 ft., drilling 3,326 ft., Ellis County.
1-12-22w, N½ NW NE ..... McKnab 1 Krysi
5-in. 4,043 ft., standard tools 4,052 ft., no show, T.D. 4,070 ft., 5 bbl. water an hr. at 4,064-70 ft., Trego County.
9-13-14w, E½ NE NW ..... Central 1 Machin
Anhydrite 840 ft., drilling 1,565 ft., Russell County.
25-15-12w, NW NW NW ..... Central 1 Waydziak
First report, Russell County.
33-15-12w, W½ NW NE ..... Jones 1 Grizzell
Dodge 2,922 ft., Lansing 2,995 ft., some show oil 3,030-35 ft., 5 bbl. water 3,105-10 ft., 7-in. 3,120 ft., drilling 3,160 ft., Russell County.
22-17-13w, E½ NE SE ..... Branine & Holl 1 Rexroot
First report, Barton County.
10-17-14w, E½ NE NE ..... Helmerich & Payne 1 Reidl
Drilling 1,310 ft., Barton County.
17-18-6w, SW SE SW ..... Continental 1 Taylor
First report, Rice County.
33-19-17w, E½ NE SW ..... Magnolia 1 Conrad
Set surface pipe at 75 ft., Rush County.
34-21-18w, N½ SW NW ..... Gulf 1 Seymore
First report, Pawnee County.
15-21-38w, E½ SE SW ..... Stanolind 1 Billinger
Mississippi lime 4,826-4,972 ft., T.D., no show, S.D., Kearny County.
8-22-1w, E½ NE NE ..... Winkler-Koch 1 Kaufman
Drilling 2,255 ft., Harvey County.
28-22-13w, W½ NW SE ..... Sephyr 1 Shotton
Fort Riley 1,930 ft., Florence 2,040 ft., Topeka 3,020 ft., Lansing 3,435 ft., Viola 3,740 ft., drilling 3,772 ft., Stafford County.
11-23-12w, N½ NE NW ..... Stanolind 1 Mary Hill-B
Lansing 3,290 ft., Simpson 3,600 ft., Arbuckle 3,664-67 ft., fair saturation, 5-in. 3,661 ft., standard tools 3,667 ft., Stafford County.
5-25-14w, W½ NW NW ..... W. W. W. 1 Wilson
Drilling 3,840 ft., Stafford County.
28-26-13e, NW NW SE ..... Brinegar 1 Kellar
Drilling 150 ft., Greenwood County.
35-27-2e, E½ SE SW ..... Aylward 1 Aylward
H.F.W. 2,525-35 ft., 8-in. 2,545 ft., underreaming 8-in. at 2,868 ft., Sedgwick County.
18-27-13w, W½ SW SW ..... Aladdin 1 Reschke
Anhydrite 860 ft., drilling 2,110 ft., Pratt County.
21-28-11e, SW SE SE ..... McPherson 1 Clogson
S.D. 600 ft., Elk County.
36-32-3e, NE NE NE ..... Shell 1 Hall
8-in. 192 ft., Cowley County.
35-34-11w, S½ SE SW ..... Pryor & Lockhart 1 Ishmael
Drilling 2,200 ft., Barber County.

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## Forest City Basin

ST. JOSEPH, Mo., May 5.—For some weeks geologists have believed that another structure of sorts existed immediately northwest of the one now producing in the Falls City pool of Richardson County, Nebraska. Finding of the Hunton lime at 2,266 ft. in Ohio 2 Bahr well tended to confirm this theory. No. 2 Bahr ran higher than No. 1 and also higher than 1 Boice, the discovery well.

That gave added interest to the pool, in which water intrusion now is causing serious concern, and another item of interest was the joint Ohio Oil Co. and Harry Harper venture. Their 1 Sibbernsen in CNL NW NE NW 20-1n-16e, is being deepened to Viola lime. The Hunton ran high, but much more water than oil was found.

In Nemaha County both Phillips Petroleum Co. and Black Gold Operating Co. had dry holes.

*McLOUTH.*—A 7,500,000-ft. gasser was found by McLaughlin Sons, Inc., in the McLouth gas pool in Jefferson County, Kansas. Location has been staked for another well, an east offset.

*MISSOURI.*—Brin & Nathan, after 2 years of trying, gave up their Holt County, Missouri, venture as a dry hole. The 2 Decker was drilled to 2,424 ft. in C SW SW SW 1-61n-38w, 5 miles east of Mound City. Seven cores were pulled in the Hunton lime. No. 1 Decker was spudded in June of 1939 in C SW SW 1-61n-38w. It was abandoned at 2,310 ft. and the rig moved to No. 2 when progress was stopped by iron in the hole. Near Westboro, in Atchison County, Missouri, the Indian Territory Illuminating Oil Co. is moving ahead rapidly at its 1 McGinnis wildcat. Thorsen & Pebley have a new rotary test just starting 2 miles south of Craig, Mo., in Holt County.

*IOWA.*—The Ohio Oil Co. completed its Fremont County, Iowa, wildcat at 3,375 ft., having topped Arbuckle at 2,951 ft. There were no oil shows.

### NEBRASKA COMPLETIONS

**Nemaha County**

Black Gold Operating Co. 1 Knisely ..... S½ NE NW 32-4n-16e
Dry, Mississippi lime 2,115 ft., Hunton 2,587 ft., T.D. 2,650 ft.

**Richardson County**

Ohio 1 Gerhardts ..... SW SE SE 7-1n-16e
Pumped 249 bbl., Hunton 2,285 ft., acid, 7-in. 2,284 ft., T.D. 2,285 ft.

### NEBRASKA DRILLING REPORT

**Richardson County**

Ohio 2 Bahr ..... SW SW SE 7-1n-16e
Hunton 2,266 ft., cemented pipe.
Ohio and Harper 1 Sibbernsen ..... CNL NW NE NW 20-1n-16e
Hunton 2,204 ft., deepening to Viola.

### MISSOURI COMPLETIONS

**Holt County**

Brin & Nathan 2 Decker .. C NW NW NW 1-61n-38w
Dry, Hunton lime 2,270 ft., T.D. 2,424 ft.

### MISSOURI DRILLING REPORT

**Holt County**

Thorsen & Pebley 1 Grant ..... SE SE 32-62n-40w
Spudded and set surface pipe.

**Atchison County**

I.T.I.O. 1 McGinnis ..... C SE SE SW 12-66n-39w
Drilling below 1,700 ft.

### IOWA COMPLETION

**Fremont County**

Ohio 1 Wisnom ..... C NW NE 23-68n-41w
Hunton 1,856 ft., Viola 2,395 ft., St. Peter 2,921 ft Arbuckle 2,951 ft., T.D. 3,375 ft., dry hole.

## Crude Oil Runs From Hobart Resumed

Crude oil runs from the Hobart pool of Kiowa County, discontinued April 1, last (The Oil and Gas Journal, April 3, 1941) were resumed last week after Howard Sherman and associates completed a 4-in. pipe line from the field to a loading rack near the town of Hobart. Phillips Petroleum Co. said it would again start running oil from the field to its loading rack, and Stanolind Oil Purchasing Co. is said to be prepared to purchase the oil which will be transported by tank cars from Hobart to Tribbey and there put into the Stanolind trunk line.

## LOUISIANA GULF COAST

By
F. L. SINGLETON

# Bayou Sale Prospect Showing Oil Below 10,000 Feet

NEW ORLEANS, La., May 5.—With Texas 1 State officially completed as the discovery well of a new field in the Octave Pass area, Plaquemines Parish, interest in the Louisiana Gulf Coast district was shifted to the Bayou Sale prospect, St. Mary Parish, where showings of oil and gas were reported logged in a wildcat test.

The probable pool opener is Humble 1 Marin, which is drilling in sandy shale below 10,715 ft., after running an electrical log at 10,117-10,400 ft. Details as to what showings were logged were not available, although sand showing oil is reported to have been cored up the hole at 10,066-10,120 ft. The well is located in 16-16s-9e, about 6 miles northwest of the Horseshoe Bayou field. The company controls a block of several thousand acres in the area which has been worked extensively with geophysical instruments.

### SUMMARY OF COMPLETIONS

| | No. | Bbl. | Footage |
|---|---|---|---|
| Oil wells: Fields | 14 | 3,237 | 100,810 |
| Dry holes: Fields | 7 | ..... | 57,186 |
| Wildcats | 3 | ..... | 29,748 |
| Total | 24 | ..... | 187,744 |

Texas 1 State, the discovery well of the Octave Pass field, Plaquemines Parish, flowed 195 bbl. of 36.1-gravity oil per day through a 5/32-in. choke under a tubing pressure of 1,300 lb. The well showed for a producer the previous week when tested at 11,420-50 ft., and final completion was made by making additional perforations at 11,370-11,400 ft. No bridge plug was set as reported, and the well is flowing from the two perforated sand sections which is the Miocene.

*DELACROIX ISLAND.*—In the same parish, and located in the Delacroix Island area, south of Lake Borgne, Texas Co. continues to test 1 State at a plugged-back depth of 8,900 ft. but the results of the test were not available. Several drill-stem tests through perforated casing below 9,000 ft. recovered salt water. Location for a new wildcat was announced by the company for 1 State-Demis Pass in 5-20s-19e.

*BAY MARCHAND.*—This dome in southern La Fourche Parish was proven to be an immense structure as Gulf 1 State P. P., approximately 9,000 ft. offshore in the Gulf of Mexico, topped salt at 2,976 ft. and cored the formation at 2,990 ft. Casing is being cemented to test sand which was logged up the hole. If successfully completed the well will open the first production for the dome which was found in 1937. Topping of the salt formation at such a shallow depth indicates that the Gulf well is located on the apex of the structure, and that previous development has been on the north flank of the structure. Three tests have been drilled in this area, the deepest being abandoned in salt at 9,660 ft., which was topped at approximately 7,900 ft.

*BELLE ISLE.*—Sun Oil Co. is expected to start a new operation at the Belle Isle dome, St. Mary Parish, where the company's 1 Belle Isle was recently completed as a distillate producer to open the first production for the structure. The well is located on state-owned lands, north of the discovery well in 31-17s-11e. The discovery well is producing from sand through perforated casing at 9,830-70 ft.

*POTASH.*—In the Potash field, Plaquemines Parish, Brown & Wood staked location for 1 State-Mississippi River on the west side of the river. This is the first test to be drilled on the structure by an independent operator since deep-sand production was developed by Humble Oil & Refining Co. from two horizons at 8,000 and 8,500 ft.

Tentative location for a deep test on the Chacahoula dome, La Fourche Parish, is reported to have been made by Superior Oil Co. of California. Although foot measurements are not available the well will be drilled on the north side of northwest flank.

*GUEYDAN.*—A slight west extension to the deep-sand production on the south flank of the Gueydan field, Vermilion Parish, is indicated as Pure 7 Alliance Trust Co. is standing cemented with 5½-in. casing on bottom at 9,841 ft., preparatory to testing sand which was logged by an electrical log at intervals from 9,700-9,800 ft. The well is a west offset to the discovery well.

*VILLE PLATTE.*—The southern limits of the Ville Platte field, Evangeline Parish, was further defined as Continental 1-B H. J. Vidrine was abandoned at 10,236 ft. In spite of several recent failures, this field remains the most active in the district with some 12 active operations reported, and the limits of the field still undefined in several directions.

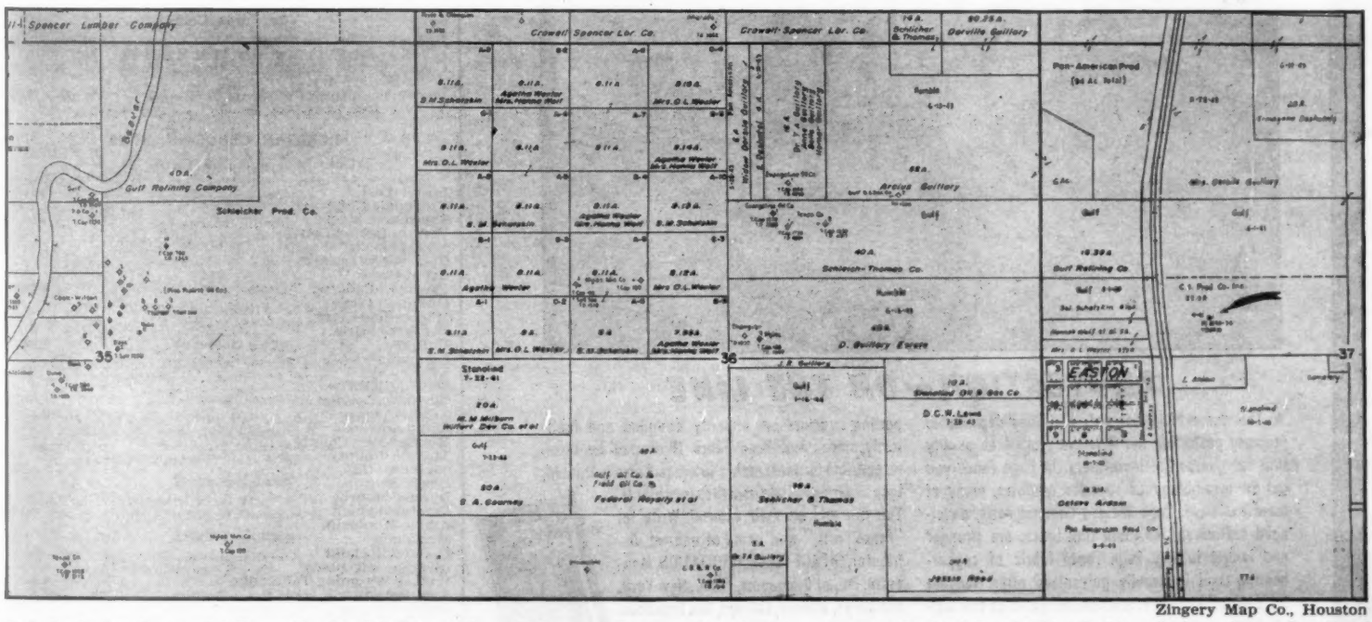
*EDGERLY.*—Gulf 1 Miller reported the previous week as opening a new sand on the southeast flank of the Edgerly field, Calcasieu Parish, has been shut in while storage and separator were being hooked up preparatory to making a production test. The well is reported to have flowed at the estimated rate of 35 bbl. of 42-gravity oil per day through a ⅛-in. choke from perforated casing at intervals from 6,911-25 ft.

*IOWA.*—A slight east extension to the 8,200-ft. sand in the Iowa field, Calcasieu-Jefferson Davis parishes, was recorded by Shell 8 Fontenot. Originally completed in the 6,900-ft. sand, the well was deepened to the lower pay, and was completed for an initial production of 500 bbl. per day through a ¼-in. choke. The company's 33 Heyd is nearing the 8,200-ft. sand following a drill-stem test at 6,993-7,003 ft., which recovered several hundred feet of oil and some salt water.

In Terrebonne Parish, and located in the Minor area, southwest of the town of Houma, Stanolind Oil & Gas Co., staked location for 1 Realty Operators, Inc., in 102-17s-17e. An 11,000-ft. dry hole was drilled in this area several years ago, and the new location, about 3,700 ft. north of the dry hole, was made after the area had been rechecked with geophysical instruments.

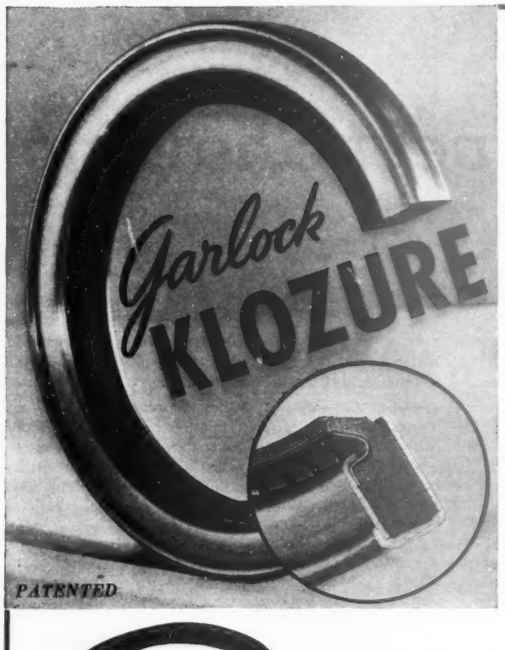
*WESTWEGO.*—Reese E. Carter 1 Craven, ¼ mile east of the discovery well of the Westwego field, Jefferson County, perforated casing at 8,994-9,001 ft., and the well flowed at the rate of 12 bbl. of fluid per hour, 50 per cent of which was oil and the remainder salt water. Working pressure was 400 lb. At the end of the week the perforations had been squeezed off and another test was to be made. It is reported that the location recently made by Stanolind Oil & Gas Co. for 1 V. A. Pitre, about 1,150 ft. east of the Carter well, will probably be abandoned and a new location made.

Navarro 1 Cooper, a Wilcox test in Rapides Parish, was abandoned after coring salt-water sands in both the Sparta and Wilcox formations. The Sparta was topped at 3,747 ft., and the Wilcox at 4,658 ft.




Zingery Map Co., Houston

**C. I. Production Co. et al 1 Evangeline Land & Mineral Co., which opens deep sand production on the east flank of the old Pine Prairie salt dome, Evangeline Parish**

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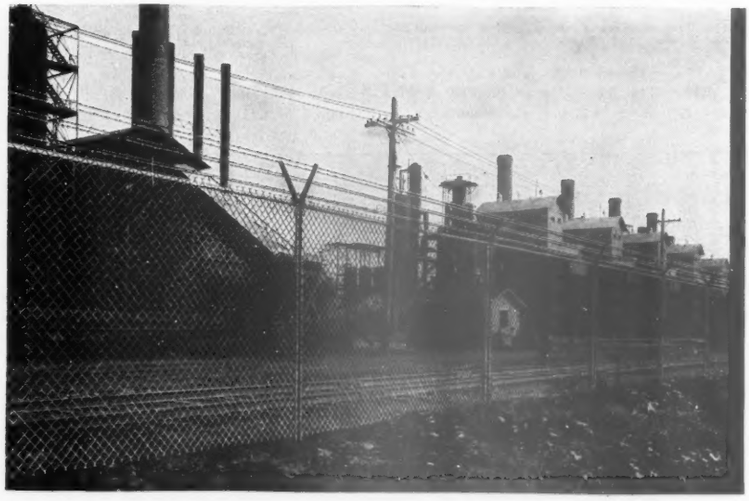

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### LOUISIANA GULF COAST COMPLETIONS

**Ascension Parish**

Darrow: Humble 37 Humble-Community, dry, T.D. 4,739 ft.

**Cameron Parish**

Black Bayou: Shell 46 Watkins, 157 bbl., ⅛-in. choke, perf. casing 4,781-86 ft., T.D. 4,880 ft.
Cameron Meadows: Burton-Sutton 2-A School Board, 195 bbl., ¼-in. choke, perf. casing 3,998-4,001 ft., T.D. 4,772 ft.

**Evangeline Parish**

Pine Prairie: C. I. Production Co. 1 Evangeline Land & Mineral Co., 810 bbl., ¼-in. choke, perf. casing 8,226-33½ ft., T.D. 8,236 ft.
Ville Platte: Continental 1 Ed. Tate, 174 bbl., ⅜-in. choke, perf. casing 9,900-34 ft., T.D. 10,177 ft.

**Iberia Parish**

Bayou Pigeon: Plymouth 1 Jeanerette Lumber & Shingle Co., dry, T.D. 11,934 ft.
Plymouth 2 Lynch McHugh, dry, T.D. 8,402 ft.
Jefferson Island: Texas 7 Jefferson Island Salt Mining Co., dry, T.D. 8,345 ft. salt, top salt 8,341 ft.

**Iberville Parish**

St. Gabriel: Titanic 1 McDermott-Natalbany Lumber Co., dry, T.D. 9,233 ft.

**Jefferson Davis Parish**

Woodlawn: Union Sulphur 3 Trimble, 140 bbl., ⅛-in. choke, perf. casing 8,036-46 ft., T.D. 8,075 ft.

**Jefferson Parish**

Barataria: California 5 Fleming Plantation, 310 bbl., 5/32-in. choke, perf. casing 8,761-82 ft., T.D. 10,493 ft.
California 6 Fleming Plantation, 280 bbl., 5/32-in. choke, perf. casing 8,227-47 ft., T.D. 8,370 ft.

**La Fourche Parish**

Golden Meadow: Bering Oil Co. 1 U. Terrebonne, 172 bbl., 10/64-in. choke, perf. casing 5,434-41 ft., T.D. 5,488 ft.

**Plaquemines Parish**

Venice: Tide Water 14 Manhattan Land & Fur Co., 196 bbl., ⅛-in. choke, perf. casing 7,780-7,800 ft., T.D. 7,902 ft.

**Rapides Parish**

Wildcat: Navarro 1 D. K. Cooper, dry, T.D. 7,035 ft.

**St. Martin Parish**

Henderson: Texas 15 St. Martin Land Co., dry, T.D. 9,118 ft.
Anse La Butte field: Glassell & Glassell 1 Anse La Butte Development Co., dry, top salt 5,394 ft., T.D. 5,415 ft.
Stanolind 1 E. Bergeron, 220 bbl., 10/64-in. choke, perf. casing 4,755-72 ft., T.D. 4,775 ft.
West Lake Verrette: Shell 8 Jeanerette Lumber & Shingle Co., 189 bbl., 10/64-in. choke, perf. casing 8,402-10 ft., T.D. 8,616 ft.

**St. Mary Parish**

Charenton: St. Mary Oil Co. 5 Hertel, 140 bbl., pumping, top sand 1,149 ft., T.D. 1,169 ft.

*(Continued on Page 108)*

## Michigan Fields

*(Continued from Page 90)*

Wise Township: American Drilling Co. 1 Jourdain, SE NW NW 17-16n-3w, 100 bbl., acid, T.D. 3,741 ft.

**Ottawa County**

Jamestown Township: Southwest Development Co. 1 Osterbroek, SE SE NW 3-5n-13w, dry, T.D. 1,780 ft.
Tallmadge Township: Edward B. Strom 1 Vugtevean, NE SE NW 1-6n-13w, 15 bbl., acid, T.D. 1,881 ft.

**Roscommon County**

Higgins Township: Sun Oil Co. 1 Watson, NW NE NW 26-24n-2w, dry, T.D. 3,047 ft.

**Van Buren County**

Bloomingdale Township: S. L. Conant 1 Simmons, NE NW SE 24-1s-14w, dry, T.D. 1,366 ft.
Columbia Township: Miller Bros. 1 Foster, SE SW SW 2-1s-15w, dry, T.D. 1,160 ft.
Porter Township: California Drilling Co. 1 Theisen, NE SW SW 18-4s-13w, 30 bbl., acid, T.D. 1,143 ft.

### MICHIGAN CRUDE-OIL RUNS

(Daily Average for March, 1941)

| Pool— | Wells | Runs |
|---|---|---|
| Porter-Yost | 337 | 4,569 |
| Greendale-Chippewa | 176 | 1,197 |
| Sherman-Isabella | 61 | 886 |
| Vernon-Leaton-Denver | 73 | 813 |
| Wise-Isabella | 62 | 1,319 |
| Reed City-Osceola | 1 | 37 |
| Grant-Clare | 2 | 21 |
| Freeman-Redding | 143 | 6,767 |
| Hamilton-Clare | 1 | 0 |
| Winterfield-Clare | 3 | 349 |
| Beaverton-Grout | 25 | 406 |
| Buckeye | 288 | 1,967 |
| Edenville | 26 | 208 |
| Bentley | 35 | 272 |
| Secord-Gladwin | 2 | 0 |
| Ogemaw County | 223 | 1,092 |
| Adams-Arenac | 30 | 3,464 |
| Clayton-Arenac | 50 | 935 |
| Monitor-Bay County | 7 | 168 |
| Tuscola County | 4 | 0 |
| Saginaw City | 51 | 33 |
| Birch Run | 25 | 24 |
| Dundee-Monroe | 18 | 262 |
| Crystal-Wyman | 34 | 352 |
| Amble-Montcalm | 3 | 97 |
| Muskegon | 56 | 69 |
| Holland-Zeeland | 3 | 8 |
| Allegan—all pools | 522 | 4,380 |
| Walker-Wyoming-Tallmadge | 473 | 4,867 |
| Van Buren—all pools | 293 | 2,813 |
| Barry County | 1 | 0 |
| Totals | 3,028 | 37,373 |

# Mahoning County Clinton Test Completed as Small Gasser

By STAFF CORRESPONDENT

NEWARK, Ohio, May 5.—The Magnolia Petroleum Co. 1 Dill Shum, Clinton test in Smith Township, Mahoning County, Section 4, was tubed as a small gas well and turned into the line to test. The well gaged 44,000 cu. ft. when shut in after shot. Total depth was 5,020 ft.

The deep tests continue. In Harrison County Brendel Producing Co. 1 Muskingum Conservancy district, Stock Township, logged the lime at 3,925 ft. and Oriskany at 4,086-4,111 ft.; the Oriskany carried water. In Washington Township East Ohio 1 Elizabeth Phillips topped the lime at 3,970 ft. with hole full of water in the Oriskany horizon at 4,125 ft. Both tests are drilling ahead. The Ohio Oil Co. 8 J. H. Armstrong, Wooster Township, Wayne County, is drilling in the Trenton at 5,515 ft.

*SOUTHERN OHIO.*—In Meigs County a shallow test in Salem Township in the western part of the county, yields a good gas showing at 655 ft. This is the first commercial producer in the township. A fair oil showing was encountered in the Berea in the northeastern section of the county, in Orange Township.

Fair gas wells were completed in Ashland, Licking, and Medina counties. Wildcat tests found the Clinton horizon dry in Jackson and Stark counties.

*SOUTHEAST OHIO.*—In Columbiana County Natural Gas Co. of West Virginia has reached 3,200 ft. in the Oriskany test on the W. Watson farm, Section 25, Wayne Township.

## SUMMARY OF COMPLETIONS

*Ohio*

| | | | |
|---|---|---|---|
| Oil wells | 6 | 260 | 15,110 |
| Gas wells | 15 | *12.6 | 39,652 |
| Dry holes | 6 | ..... | 14,726 |
| Total | 27 | ..... | 69,488 |

*Indiana*

| | No. | Bbl. | Footage |
|---|---|---|---|
| Oil wells | 1 | 24 | 1,160 |
| Dry holes | 4 | ..... | 3,653 |
| Total | 5 | ..... | 4,813 |

*Eastern Kentucky*

| | | | |
|---|---|---|---|
| Oil wells | 1 | 25 | 1,255 |
| Gas wells | 3 | *1.4 | 6,832 |
| Dry holes | 1 | ..... | 1,365 |
| Total | 5 | ..... | 9,452 |

*Western Kentucky*

| | | | |
|---|---|---|---|
| Oil wells | 2 | 70 | 1,777 |

*Million cu. ft.

### OHIO COMPLETIONS

**Ashland County**

Mohican Township: Ohio Fuel 2 Hootman & Crumlick, Sec. 22, 1,050,000 cu. ft. gas, shot, Clinton, T.D. 2,881 ft.

**Athens County**

Carthage Township: Ohio Fuel 7 Michael Kinnen, Fraction 32, show oil, Berea, plugged, T.D. 1,791 ft.

**Coshocton County**

Perry Township: Blackburn et al 1 Sarah Crawford, Sec. 24, 900,000 cu. ft. gas, Clinton, T.D. 3,031 ft.

**Fairfield County**

Richland Township: Ohio Fuel 1 L. D. Irick, Sec. 3, 75,000 cu. ft. gas, shot, Clinton, T.D. 2,709 ft.
Preston Oil Co. 1 Minnie Hite, NE Sec. 3, 300,000 cu. ft. gas, Clinton sand, T.D. 2,760 ft.

**Jackson County**

Bloomfield Township: Fred Hurt et al 1 McKell heirs, Sec. 14, dry, Clinton, T.D. 3,002 ft.

**Licking County**

Granville Township: Moran Bros. 1 P. Ray, SE fourth quarter, 300,000 cu. ft. gas, shot, Clinton, T.D. 2,303 ft.
Madison Township: Ohio Fuel 1 Arthur Neibarger, Lot 1, second quarter, 1,550,000 cu. ft. gas, T.D. 2,017 ft.
Perry Township: McCaly Bros. 6 Emmet E. and Olive M. Hoover, Sec. 3, 35 bbl., Clinton sand, T.D. 2,925 ft.

**Knox County**

Butler Township: Upham Gas Co. 1 T. L. Ferenbaugh, Sec. 4, 700,000 cu. ft. gas, shot, Clinton, T.D. 2,780 ft.
Union Township: Brooks Johnson 1 B. B. Ferenbaugh, Lot 38, dry, Clinton, T.D. 3,014 ft.

**Mahoning County**

Smith Township: Magnolia Petroleum 1 Della Shrum, Sec. 4, 44,000 cu. ft. gas, shot, Clinton, T.D. 5,020 ft.

**Medina County**

Granger Township: M. L. Packard et al 1 Fred Lang, 1 acre, Lot 25, 60 bbl., Berea grit, T.D. 515 ft.
Spencer Township: Ohio Fuel 1 Anna Bower, Sec. 11, 1,400,000 cu. ft. gas, Clinton, T.D. 2,648 ft.
East Ohio 1 F. L. Coomer, Sec. 11, 600,000 cu. ft. gas, shot, Clinton, T.D. 2,684 ft.

**Meigs County**

Salem Township: Charles E. Downie 1 Martha Butricks, Sec. 2, 900,000 cu. ft. gas, stray or second Cow Run 615-55 ft.
Salisbury Township: Bush et al 7 A. Heilman, Sec. 36, 40,000 cu. ft. gas, Maxon, T.D. 868 ft.
Sutton Township: Proffitt 5 W. D. Roush, Sec. 30, 50,000 cu. ft. gas, shot, Ohio shales, T.D. 3,345 ft.
Orange Township: Ohio Fuel 1 Guy Dean, Sec. 30, showed 20 bbl. oil natural after drilling 5 ft. in the Berea, S.D. at 1,698 ft., top of sand 1,693 ft.

**Monroe County**

Adams Township: H. B. Walker 1 A. Pittman, Sec. 32, dry, Berea, T.D. 2,187 ft.

**Noble County**

Noble Township: W. C. Harper 1 E. L. Long, Sec. 34, dry, M-300 sand, T.D. 217 ft.

**Perry County**

Clayton Township: Preston Oil 1 Margaret S. Shaw, Sec. 7, 35 bbl. oil, shot, Clinton, T.D. 3,152 ft.
Preston Oil 2 J. H. Cookson, Sec. 8, 95 bbl. oil, shot, Clinton, T.D. 3,305 ft.
Harrison Township: Clyde Foraker et al 2 Mary Conway, Sec. 28, 15 bbl. oil, 200,000 cu. ft. gas, shot, Clinton, T.D. 3,515 ft.

**Stark County**

Bethlehem Township: Wittmer O. & G. Corp. 1 C. E. Turnbull, Sec. 4, dry, Clinton, T.D. 4,515 ft.
Lake Township: C. W. White 1 Sabilia Brumbaugh, Sec. 34, 890,000 cu. ft. gas, shot, Clinton, T.D. 4,589 ft.

**Washington County**

Liberty Township: Interstate Co. 1 J. W. Roberts, Sec. 15, 800,000 cu. ft. gas, Maxon, T.D. 1,362 ft.

## INDIANA

EVANSVILLE, Ind., May 5.—The Rockport gas field of Spencer County may soon become an oil-producing field if attempts of the Texas Co. to complete 1 Scamahorn as an oil well in the Palestine are successful. No. 1 Scamahorn, SW NE NW 29-7s-6w, offsets gas production in the Palestine, and was showing for a 9,000,000-cu. ft. gas producer at 891-97 ft. At 915 ft. gas production was gaged at 16,000,000 cu. ft. daily. Gas, however, has been cemented off, and 5-in. casing set to test an oil show.

The Rockport gas field is being developed on a 40-acre spacing regulation, and successful completion of 1 Scamahorn as an oil well will necessitate numerous offsets by both Gulf Refining Co. and Kentucky Natural Gas Co.

*SPENCER COUNTY.*—Meanwhile, another Spencer County wildcat, Ladmer et al 1 Cokes, SE NE NE 12-7s-8w, was showing for a good producer from the Waltersburg sand at 1,044 ft. No. 1 Cokes topped pay in the Waltersburg sand at 1,044 ft. and is bottomed in saturated sand at 1,047 ft. It was disclosed last week that the well is swabbing with about 900 ft. of oil in the hole while being cleaned out following a 65-qt. shot.

*POSEY COUNTY.*—Gulf 1 Levin Blackburn, NE NE SE 23-6s-13w, which 2 weeks ago cored unexpected saturation at 1,631-40 ft., was apparently dry through the McClosky last week. The McClosky carried a slight show of gas at 2,765-70 ft., and the second break in the McClosky at 2,820-25 ft. was dry. No. 1 Blackburn, north offset to Gulf 1 Schreiber, recent Cypress sand discovery well, was drilling ahead at 2,851 ft. at the end of the week.

*GRIFFIN.*—Continental Oil Co. last week obtained the largest producer yet completed in the Griffin field of Posey and Gibson counties when A-5 Kleiderer, SE NW NE 33-3s-14w, came in with a flow of 1,390 bbl. in 17 hours through a 1⅝-in. choke. Production was obtained from the McClosky at 2,883-98 ft. following an acid treatment of 5,000 gal. Hole is bottomed at 2,898 ft. The McClosky carried two other breaks of slight saturation at 2,845-48 ft. and 2,869-73 ft.

### INDIANA COMPLETIONS

**Monroe County**

Wildcat: Terry Deskins 1 Carey, NW NW SE 5-9n-1e, location abandoned.

**Porter County**

Wildcat: Kavana 1 Chesterton State Bank, NW NW NE 20-37n-5w, dry, T.D. 360 ft.
Joe Bander 2 Jones, SE NE SW 20-36n-5w, dry, T.D. 318 ft.

**Shelby County**

Wildcat: Phillips & Kost 1 Bowman, SE SE SE 26-14n-6e, dry, T.D. 1,055 ft.

**Vanderburg County**

Wildcat: T. W. Drake 1 Nurrenbern, SE NE NE 6-7s-11w, pumped 24 bbl., 40-qt. shot 1,148-60 ft., pay 1,148-60 ft., T.D. 1,160 ft.
Illind 1 Hendricks, S½ SE SW SE 31-6s-11w, dry, T.D. 1,920 ft.

### INDIANA DRILLING REPORT

**Crawford County**

Reece-Dietz et al 1 Esarey.....NE NW NE 36-3s-1w
Drilling 499 ft.

**Daviess County**

D. L. Norris et al 1 Hunter....SW SE NW 4-2n-5w
Set 6-in. 65 ft., drilling 411 ft.

**Dubois County**

J. C. Howes 1 Eckert....SW NE NW SW 14-3s-3w
Location, first report.

**Elkhart County**

Headley et al 1 Poyser.....SE SE SE 11-38n-4e
Location, first report.
A. W. Downs 1 Bement.....NW NW SW 12-38n-4e
Set 5-in. 621 ft., Devonian 626 ft., show oil 653-90 ft., P.B. 660 ft., will acidize 250 gal.
R. B. Tamblyn 1 Greene.....NW NW NW 13-38n-4e
Set 10-in. 98 ft., drilling 170 ft.
T. C. Hudson 1 Seaman.....NE NE NW 14-38n-4e
Devonian 614 ft., 5-in. 617 ft., running 4-in. 618 ft.

**Gibson County**

Oleum Pet. Corp. 1 Curd.....SE NW NW SE 5-2s-8w
Spud 100 ft.
Mabee 1 Helm.....SW NW NW 27-3s-14w
Flowing 6 bbl. an hr., will put on pump.
W. C. McBride et al 1 Blood....SE SE NE 28-3s-14w
T.D. 2,950 ft., perf. 2,912-16 ft., 1,000 gal. acid, swabbed 70 bbl. oil and 113 bbl. water, put on pump.

**Greene County**

Midwest et al 1 Good.....W½ NE NW 21-6n-7w
Salem 1,348 ft., drilling 1,533 ft.

**Harrison County**

A. E. Winning 1 Miller.....SE SW SW 5-2s-4e
Location, 900-ft. test, first report.

**Perry County**

H. E. Pollock 1 J. F. Heck.....SE SE SE 16-7s-3w
Set 5-in. 565 ft., drilling 690 ft.
B. A. Vonberg 1 Frazier.....W½ W½ NW 1-6s-3w
First report, drilling 600 ft., cable tools.

**Posey County**

Johnson O. & R. et al 1 Spencer..SE SE SE 26-7s-15w
Menard 2,012 ft., Glen Dean 2,212 ft., Barlow 2,444-50 ft., Cypress 2,500 ft., drilling 2,546 ft.

**Spencer County**

I. A. Paulhamus 1 Grass.....SW NE SE 11-6s-4w
Set 8-in. 400 ft., drilling 575 ft.
Troy Refg. 1 Grass.....S½ SE NE SE 11-6s-4w
Location, first report.
Texas 1 Scamahorn.....SW NE NW 29-7s-6w
Set 10-in. 20 ft., 8-in. 256 ft., drilling 700 ft.
J. B. Miller et al 1 Dooley....NW NE NW 19-7s-7w
Drilling 400 ft.
Ladmer et al 1 Cokes.....N½ SE NE NE 12-7s-8w
Drilling 895 ft.
Louis Wade et al 1 Squire.....SE SW SW 7-7s-6w
Drilling 275 ft.
Troy Refg. et al 1 Huffman.....NW SE SE 11-7s-7w
First report, machine.

**Starke County**

J. L. Black et al 1 Kennedy....NW SW NE 26-33n-2w
Set 10-in. 20 ft., 8-in. 120 ft., drilling 525 ft.

**Sullivan County**

G. W. Boyce et al 1 Kelly....SW SW NE 10-8n-11w
Drilling 2,240 ft.
W. J. Reynolds 1 Hyde.....SW NE NE 9-8n-10w
Drilling 1,497 ft.
Trio Drlg. 1 Ladd.....NE SW 2-7n-10w
Set 8-in. 140 ft., 6-in. 520 ft., drilling 601 ft.

**Vanderburg County**

T. W. Drake 1 Nurrenbern....SW NW NW 5-7s-11w
Set 8-in. 865 ft., drilling 935 ft.
R. A. Mitchell et al 1 Keck....NE SW SW 6-7s-11w
Fishing 1,400 ft.

**Vigo County**

Sage & Farley 1 Campbell....S½ NE NW 24-11n-8w
Drilling 2,860 ft.

**Warrick County**

Yankeetown Dev. 1 Taylor.....SW SW NW 10-7s-8w
S.D. 1,455 ft.

## EASTERN KENTUCKY

ASHLAND, Ky., May 5.—A wildcat, 7 miles from any already drilled, has been brought in, in Martin

*(Continued on Page 100)*

By
STAFF CORRESPONDENT

# Devonian Test at Louden Is Below Top of Formation

MATTOON, Ill., May 5.—The future of the Louden field of Fayette County, second largest oil pool in Illinois, will soon be determined by Whisenant & Trenchard 25-D Henry Lilly, most closely watched test in the basin at the present time. At last reports, 25-D Lilly, Devonian test in E½ NW SE 16-8n-3e, was drilling in the Devonian lime below 3,000 ft. with pay expected at any time. Confidence in the venture was reflected by the operators when they staked locations for five other Devonian wells.

## SUMMARY OF COMPLETIONS

| | No. | Bbl. | Footage |
|---|---|---|---|
| Oil wells: Benton | 5 | 2,044 | 10,712 |
| East Calvin | 4 | 480 | 11,341 |
| Enterprise | 1 | 1,360 | 3,038 |
| Hoodville | 4 | 327 | 12,259 |
| Louden | 2 | 434 | 3,133 |
| Mount Carmel | 7 | 913 | 15,355 |
| North New Harmony | 7 | 1,375 | 19,569 |
| Other pools | 13 | 1,423 | 32,684 |
| Wildcats | 1 | 38 | 1,735 |
| Dry holes: Fields* | 8 | ..... | 19,909 |
| Wildcats | 12 | ..... | 25,225 |
| Total | 64 | ..... | 154,960 |
| Recompletions | 11 | 1,206 | ..... |

*Centralia 1, Hoodville 2, West Liberty 1, Allendale 1, East Calvin 1, Storms 1, Springerton 1.

If the well encounters sufficient saturation for commercial production, the long-awaited Devonian development program may be expected in the county. The Louden field has three shallow-pay formations at present but its boundaries practically have been defined and development of the three pays is almost complete.

S. D. Jarvis and associates a short time ago announced a location for a Devonian test on the Sam Mize lease across the road from the Whisenant & Trenchard well but the tract was purchased last week by Carter Oil Co. for an unannounced sum. A Devonian well on that location would have required several offsets by Carter.

Meanwhile, Carter Oil Co.'s second stratigraphic test to collect information on Devonian production possibilities has been completed but its findings were not disclosed. The test was drilled to a total depth of 3,300 ft. on the Elsie McClain farm in Section 32.

### New Pool Opener Proves Disappointing

Edwards County obtained a new oil pool 5 miles west of the Albion field early last week when R. B. Martin 1 R. P. Lester, W½ SW SW 19-2s-10e, swabbed 10 bbl. of oil an hour and no water following perforations opposite McClosky pay between 3,341-51 ft. However, later in the week the well began producing water and, at last reports, was showing about one-third water. At the end of the week operators were considering running a cement-squeeze job.

### Dahlgren Pool Active

Overshadowed by the large Hoodville and Dale pools since its discovery, the rapidly growing Dahlgren pool of Hamilton County is at last being noticed by Illinois operators. Discovered early in January of this year by Dick Duncan 1 Zellars, 27-3s-5e, the new pool now has 12 producing wells, all completed in the McClosky, with combined production of nearly 3,000 bbl. daily. In addition, there are now six tests drilling and locations staked for four others.

A closely watched outpost, DeKalb Agricultural Association 1 C. L. Scrivner, S½ NE SW 27-3s-5e, at the end of the week was drilling at 2,500 ft. with the McClosky pay expected between 3,280 ft. and 3,300 ft. This test, if successful, will extend the pool to the north. The pool at the present time has 360 proven acres, all productive from the McClosky, only pay horizon yet found in the field. The field has not yet been limited to the west, south or northwest, and since the heaviest producers were recently completed to the northwest, most observers are predicting important extensions in that direction. Most geologists, however, doubt that the new field will rival the Hoodville area in size.

*ALLENDALE EXTENSION.*—Benoist sand production in the old Allendale pool of north Wabash County was extended about 1 mile north late last week when V. A. Kraft 1 J. H. McClain, SW SE NE 36-2n-12w, filled to a depth of 1,100 ft. after plug was drilled. It is believed that the well will flow natural when it is cleaned out. The Benoist pay is reported to have been encountered about 10 ft. higher than in producers to the south.

### ILLINOIS COMPLETIONS

#### Bond County

Wildcat: Regent Oil 1 R. N. Harwood, SW SW NE 6-6n-3w, dry, T.D. 820 ft.

#### Clark County

Wildcat: Sherritt et al 1 Jeffers, SE NE SE 31-11n-13w, dry, T.D. 1,710 ft.

#### Clinton County

Centralia: Kriegh 1 Phoenix, SW SW NW 14-1n-1w, dry, Cypress 1,264 ft., Benoist 1,439 ft., T.D. 1,452 ft.

#### Fayette County

Louden: Texas 15 O. Matheny, SE NW NE 6-6n-3e, pumped 80 bbl. in 15 hr., 5-qt. shot 1,583-88 ft., Cypress sand 1,572-82 ft., T.D. 1,588 ft.

Carter 3 Ada Clow, E½ SW NE 15-8n-3e, pumped 354 bbl., 40-qt. shot 1,405-25 ft., 40-qt. shot 1,429-95 ft., T.D. 1,545 ft., P.B. 1,520 ft.

#### Franklin County

Benton: Shell 2 C. W. & F. Coal, SW NE SW 24-6s-2e, pumped 368 bbl., 15-qt. shot 2,121-31 ft., Tar Springs sand 2,091 ft., T.D. 2,131 ft.

Adkins 1 Rice, SW NE NW 25-6s-2e, pumped 550 bbl., 25-qt. shot 2,110-26 ft., Tar Springs sand 2,092 ft., T.D. 2,126 ft.

Adkins 2 Rice, NW SE NW 25-6s-2e, pumped 510 bbl., 20-qt. shot 2,130-45 ft., Tar Springs sand 2,121 ft., T.D. 2,145 ft.

Menhall et al 1 Moore, E½ SW NW 25-6s-2e, flowed 300 bbl., 20-qt. shot 2,136-47 ft., Tar Springs 2,131 ft., T.D. 2,147 ft.

Shell 5 W. E. Doty, NW SW NE 25-6s-2e, pumped 316 bbl. in 22 hr., 15-qt. shot 2,148-58 ft., Tar Springs sand 2,128 ft., T.D. 2,163 ft.

Wildcat: Bay Oil 1 Franklin County Coal Co., SW SW NE 8-6s-3e, dry, Golconda 2,413 ft., Cypress 2,600 ft., Cypress sand 2,660 ft., Paint Creek 2,662 ft., Renault 2,795 ft., Aux Vases 2,840 ft., Ste. Genevieve 2,871 ft., Rosiclare 2,892 ft., Fredonia 2,931 ft., McClosky 2,950 ft., T.D. 3,110 ft.

#### Gallatin County

Inman: Egyptian T. & T. 4 Egyptian T. & T., NE NE SE 16-8s-10e, pumped 205 bbl., 10-qt. shot 2,067-74 ft., Tar Springs 2,063 ft., T.D. 2,074 ft.

Omaha: Carter 1 L. Rister, NE SW NW 4-8s-8e, pumped 4 bbl., 22-qt. shot 1,700-07 ft., Palestine 1,688-1,707 ft., T.D. 1,720 ft.

Carter 4 A. Kinder, NE SW SE 33-7s-8e, pumped 34 bbl. oil and 8 bbl. water, 10-qt. shot 1,727-32 ft., Palestine 1,729-36 ft., T.D. 1,739 ft.

Wildcat: Fitzgerrel 1 Doherty, W½ W½ NW 24-8s-9e, dry, T.D. 1,955 ft.

#### Hamilton County

Hoodville: Texas 1 B. Lager, NW SW NE 10-6s-6e, dry, T.D. 3,200 ft., P.B. 3,040 ft.

Texas 1 K. Edwards, NW NE NW 11-6s-6e, pumped 71 bbl. from Benoist and Aux Vases, perf. 2,948-60 ft., Benoist 2,946-62 ft., Aux Vases 3,047-52 ft., T.D. 3,052 ft.

Ohio 9 O. Matheny, SE SW SE 3-6s-6e, pumped and flowed 168 bbl., Benoist 2,982-95 ft., Aux Vases 3,075 ft., T.D. 3,082 ft.

Texas 12 C. W. Hood, NW NE NW 3-6s-6e, pumped and flowed 73 bbl., 10-qt. shot 2,965-70 ft., 20-qt. shot 2,964-70 ft., Benoist 2,957-70 ft., T.D. 3,064 ft.

Parker Drlg. 2 Troubaugh, SE SE SW 27-5s-6e, dry, T.D. 2,983 ft.

Sinclair 6 Stelle, NW NE SE 27-5s-6e, pumped 15 bbl., 5-qt. shot 3,052-54 ft., 10-qt. shot 3,054-59 ft., Aux Vases 3,048 ft., T.D. 3,061 ft.

Sinclair 3 J. H. Stelle, NW NW SE 27-5s-6e, pumped 109 bbl., 5-qt. shot 3,044-48 ft., Aux Vases 3,041 ft., old well deepened from 2,968-3,048 ft.

Dale: Texas 3 M. Davis, SW NW NE 7-6s-7e, flowed 184 bbl., Cypress sand 2,696 ft., old well deepened from 2,670-2,715 ft.

Dahlgren: Rockfield O. & G. 1 G. Hood, SE NE NW 34-3s-5e, pumped 217 bbl., 2,000 gal. acid, 1,000 gal. reacid, 2,000 gal. reacid, McClosky 3,307-17 ft., T.D. 3,350 ft.

#### Hancock County

Wildcat: Sam Tate et al 1 J. Rice, SW NE NW 28-4n-5w, dry, T.D. 2,085 ft., P.B. 2,060 ft.

#### Jasper County

West Liberty: Pure 1 N. Grove, E½ NW NE 16-5n-10e, dry, Ste. Genevieve 2,813 ft., McClosky 2,849-54 ft., T.D. 2,910 ft.

Pure 3 J. Frohning, S½ SW NW 33-6n-10e, pumped 100 bbl., 5,000 gal. acid, McClosky 2,802-04 ft., 2,808-10 ft., T.D. 2,835 ft.

Wildcat: Conner & Arnold 1 First Nat. Bank, NE SW SW 1-6n-9e, dry, base Pennsylvanian 2,195 ft., Menard 2,220 ft., Glen Dean 2,405 ft., Golconda 2,470 ft., Barlow 2,545 ft., Cypress 2,562 ft., Weller 2,589-2,633 ft., Paint Creek 2,740 ft., Benoist 2,773-97 ft., Renault 2,809 ft., Aux Vases 2,841 ft., Ste. Genevieve 2,902 ft., Rosiclare 2,915 ft., St. Louis 2,968 ft., T.D. 2,973 ft.

#### Marion County

Salem: Texas 4 Rossi-Brooks Comm., NW NE SW 29-2n-2e, swabbed and flowed 179 bbl., natural, 130-qt. shot 4,532-4,600 ft., flowed 91 bbl., Trenton 4,505 ft., old well drilled deeper, T.D. 4,610 ft.

Texas 19 Friesner, NW NE NW 32-2n-2e, pumped and flowed 93 bbl., 4,500 gal. acid, Trenton 4,449 ft., old well drilling deeper, T.D. 4,583 ft.

Texas 27 Friedrich-A, NW SW SW 29-2n-2e, pumped 200 bbl., 100-qt. shot 4,545-4,614 ft., Trenton 4,510 ft., old well drilling deeper, T.D. 4,640 ft.

Texas 14 Fossieck, SE SE NW 29-2n-2e, flowed 144 bbl., 80-qt. shot 4,554-4,609 ft., Trenton 4,510 ft., old well drilling deeper, T.D. 4,640 ft.

Magnolia 38 Shanafelt, SW SE SW 29-2n-2e, flowed 129 bbl., 130-qt. shot 4,500-66 ft., Trenton 4,461 ft., old well drilling deeper.

Magnolia 36 Shanafelt, NE SE SW 29-2n-2e, flowed 148 bbl., 120-qt. shot 4,550-4,610 ft., Trenton 4,509 ft., old well deepened from 3,440-4,625 ft.

Magnolia 30 Shanafelt, SE NW SE 29-2n-2e, flowed 54 bbl., 120-qt. shot 4,570-4,630 ft., Trenton 4,522 ft., old well deepened from 3,455-4,652 ft.

East Patoka: Shell 5 Davidson, SW NE NE 34-4n-1e, pumped 213 bbl., 10-qt. shot 1,348-65 ft., Weller 1,340-52 ft., 1,356-67 ft., T.D. 1,367 ft.

Wildcat: Swan-King 1 Martin Cemetery, SW SW SE SW 36-4n-2e, dry, T.D. 2,253 ft.

#### St. Clair County

Wildcat: A. F. Alspach 1 Smith, SW SW SE 30-3s-6w, dry, Glen Dean 233 ft., Benoist 538 ft., T.D. 550 ft.

#### Shelby County

Wildcat: W. H. Sloan 1 Cutler, SE SE SE NE 12-10n-2e, pumped 37½ bbl. oil and 7 bbl. water, 10-qt. shot 1,730-33 ft., Aux Vases 1,723-32 ft., T.D. 1,735 ft.

J. Moore et al 1 fee, NW NW NW 30-10n-3e, dry, T.D. 1,760 ft., casing collapsed and lost hole.

Ohio 1 Elliott, NE NE SE 22-11n-4e, dry, base Pennsylvanian 1,565 ft., Glen Dean 1,565 ft., Hardinsburg 1,572 ft., Golconda 1,592 ft., Barlow 1,670 ft., Cypress 1,680 ft., Weller 1,728 ft., Paint Creek 1,757 ft., Paint Creek sand 1,797 ft., Benoist 1,892 ft., Renault 1,858 ft., Aux Vases 1,867 ft., Ste. Genevieve 1,926 ft., Rosiclare 1,931 ft., Fredonia 2,026 ft., St. Louis 2,070 ft., T.D. 2,091 ft.

#### Wabash County

Mount Carmel: Shell 4 Highland Comm., SE NW SW 17-1s-12w, pumped 207 bbl., 1,000 gal. acid, McClosky 2,405-12 ft., T.D. 2,417 ft.

Babler & Hull 1 Steckler, SE SW NE 18-1s-12w, pumped 104 bbl., 20-qt. shot 2,089-98 ft., Cypress sand 2,083 ft., T.D. 2,098 ft.

Shell 1 P. E. Hein, NE NE SE 18-1s-12w, pumped 123 bbl. in 22 hr., 10-qt. shot 2,049-56 ft., Cypress sand 2,037 ft., T.D. 2,065 ft.

Stroube & Stroube 3 Mount Carmel Comm., SE SW NE 18-1s-12w, pumped 202 bbl., 40-qt. shot 2,085-2,100 ft., Cypress sand 2,081-92 ft., T.D. 2,100 ft.

E. O. Olds 1 Tordyce, NW NE SE NE 20-1s-12w, pumped 90 bbl., 20-qt. shot 2,068-73 ft., Cypress sand 2,059-73 ft., T.D. 2,073 ft.

R. Gilster et al 1 Seiler heirs, SW SE NW 30-1s-12w, pumped 75 bbl., 5-qt. shot 1,785-94 ft., 10-qt. shot 1,785-94 ft., 500 gal. acid, 3,000 gal. reacid, Tar Springs 1,791-1,801 ft., 1,808-14 ft., T.D. 2,530 ft., P.B. 1,794 ft.

Gilster & Smith 3 Risley, SE SW NW 18-1s-12w, location abandoned.

Shell 1 Gilliam, NW NW SW 17-1s-12w, pumped 112 bbl., 10-qt. shot 2,065-72 ft., Cypress sand 2,061-68 ft., T.D. 2,072 ft.

Allendale: Harris & Cohen 1 J. W. Smith, NW SE SE 9-1n-12w, dry, T.D. 2,334 ft.

Maud: Continental 4 E. E. Seiler, NW NE SE 34-1s-13w, pumped 40 bbl., 25-qt. shot 1,941-51 ft., Waltersburg sand 1,935-38 ft., 1,941-44 ft., 1,945-53 ft., T.D. 2,642 ft.

#### Wayne County

Enterprise: J. W. Sanders 1 Al Hubble, E½ SW SE 30-2n-8e, flowed 1,360 bbl., 5,000 gal. acid, Fredonia 3,013 ft., pay 3,013-31 ft., T.D. 3,038 ft.

West Enterprise: Pure 3 J. S. Elliott-A, W½ NW SE 1-1n-7e, pumped 71 bbl. oil and 3 bbl. water, 5,000 gal. acid, Fredonia 3,011 ft., pay 3,061-64 ft., T.D. 3,100 ft.

Clay City: J. W. Sanders 1 Stanford, SE SW SE 13-2n-7e, pumped 108 bbl., 5,000 gal. acid, McClosky 3,014-33 ft.

#### White County

East Calvin: Rockhill 1 Reeves, SW SW NE 28-3s-14w, pumped 50 bbl., 20-qt. shot 2,561-73 ft., Cypress sand, old well P.B. from 3,055-2,600 ft.

Arrow Drlg. 4 Hon-D, NW SW SW 33-3s-14w, pumped 100 bbl., 100-qt. shot 2,791-2,842 ft., Aux Vases 2,786-2,813 ft., T.D. 2,815 ft.

Arrow Drlg. 4 Hon-B, NW NE SW 33-3s-14w, pumped

75 bbl. oil and 40 bbl. water, 1,000 gal. acid, perf. 2,917-26 ft., McClosky 2,920-28 ft., T.D. 2,970 ft.
Buell & Herndon 9 J. Bond, SE SW NE 8-4s-14w, flowed 200 bbl., 60-qt. shot 2,794-2,826 ft., Aux Vases sand 2,794-2,826 ft., T.D. 2,829 ft.
J. German et al 4 Hon, SW NW SE 9-4s-14w, pumped 40 bbl., 30-qt. shot 2,842-60 ft., Aux Vases sand 2,842-62 ft., old well deepened from 2,722-2,862 ft.
Paul Miller 2-A-1 Ford heirs, SW SW SW 16-4s-14w, pumped 105 bbl., 60-qt. shot 2,714-27 ft., Benoist 2,706-27 ft., T.D. 2,727 ft.
W. Duncan 3-A Hughes, NE NE SE 17-4s-14w, dry, Cypress sand 2,584 ft., T.D. 2,593 ft.
W. W. Gray 2 fee-D, NE NW SW 17-4s-14w, location abandoned.
North New Harmony: Superior 6 H. M. Ford, SW NW SE 28-4s-14w, pumped 285 bbl., 100-qt. shot 2,822-45 ft.. Aux Vases 2,822-42 ft., T.D. 2,845 ft.
Superior 10 H. M. Ford, NW NW SE 28-4s-14w, swabbed and flowed 400 bbl., 120-qt. shot 2,827-52 ft., 40-qt. shot 2,831-47 ft., 30-qt. shot 2,831-47 ft., Aux Vases 2,827-51 ft., T.D. 2,852 ft.
Sun 13 E. R. Greathouse, SW NE SW 33-4s-14w, pumped 225 bbl., 140-qt. shot 2,700-30 ft., Benoist 2,673 ft., T.D. 2,731 ft.
Superior 5 H. E. Ford-D, SE NW NW 34-4s-14w, pumped 100 bbl., 120-qt. shot 2,809-35 ft., Aux Vases 2,809-35 ft., T.D. 2,835 ft.
Superior 6 H. C. Ford et al-D, NW NW NW 34-4s-14w, pumped 160 bbl., 100-qt. shot 2,700-35 ft., Benoist 2,693 ft., T.D. 2,735 ft.
Superior 7 H. C. Ford et al-D, S½ SW NW NW 34-4s-14w, pumped 190 bbl., 100-qt. shot 2,577-2,605 ft., Cypress 2,563-2,605 ft., T.D. 2,605 ft.
Storms: Blackstock 1 Storms, NW NE NE 23-6s-9e, pumped 60 bbl. oil and 25 bbl. water, 120-qt. shot 2,255-76 ft., old well deepened from 2,266-76 ft.
Sinclair and Ohio 15 S. A. Pearce, NE NW NW 12-6s-9e, pumped 15 bbl. oil and 70 bbl. water, Waltersburg sand 2,284 ft., T.D. 2,293 ft.
Clint Crosby 1 C. F. Rebstock, SE NE SW 11-6s-9e, dry, Waltersburg 2,275 ft., Waltersburg sand 2,285 ft., T.D. 2,297 ft., P.B. 2,293 ft.
West Irons: C. B. Anderson 1 M. Phillips, SW SW NW 24-6s-8e, pumped 212 bbl., 4½ per cent water, perf. 2,376-78 ft., 2,378-85 ft., 2,417-87 ft., T.D. 2,551 ft., P.B. 2,497 ft.
Mill Shoals: Texas 9 A. J. Poorman, NW NW SE 19-3s-8e, pumped 20 bbl. oil and 6 bbl. water, 14-qt. shot 3,236-50 ft., Aux Vases 3,226 ft., T.D. 3,260 ft., P.B. 3,251 ft.
Springerton: Gerson 3 Belva, SE NE NW 6-4s-8e, dry, Biehl 1,895-1,910 ft., Menard 2,008 ft., Menard lime 2,057 ft., lower Menard 2,119 ft., T.D. 2,140 ft.
Wildcat: H. E. Ledbetter et al 1 Winter, SE NE SE 24-5s-9e, dry, Renault 2,976 ft., Aux Vases 2,991 ft., Aux Vases sand 3,044 ft., Ste. Genevieve 3,085 ft., Fredonia 3,142 ft., St. Louis 3,267 ft., T.D. 3,269½ ft.
Jackson, Geier & Lambert 1 W. A. Hamilton, SW SE SW 13-7s-8e, dry, T.D. 2,648 ft.

## ILLINOIS DRILLING REPORT

### Bureau County

F. E. Webb 2 Abrahams . . . . .NE NE NE 24-18n-8e
Silurian 434 ft., T.D. 436 ft., drilling plug.

### Clinton County

Max Conrey, Jr., 1 B. O. Maschoff NE SW SW 18-1n-2w
Location, first report.
A. W. Gerson 1 Hy Bilkhart SE NW NW 22-1n-5w
First report, rigging up rotary.
Algona 1 Marshall . . . . . .SE SE SW 12-1n-1w
S.D. 3,137 ft.
A. Niehoff 1 Fehrmann . . .N½ NW NW NE 23-1n-4w
Set 8-in. 200 ft., drilling 461 ft.
Hughes 2 Holman . . . . . .NE SW SE 10-2n-1w
T.D. 1,340 ft., running 6-in.
B. E. Martin 1 C. Heinzman . . . . . .SE SE SE 4-2n-1w
Weiler 1,312 ft., H.F.W. 1,330 ft., S.D.

### Crawford County

Roy Powers (was Cullin) 1 Kirtland NE NW 7-6n-13w
Set 8-in. 130 ft., drilling 1,510 ft.
J. Steele 1 M. S. Davis . . . . . NE SW NE 23-7n-13w
Mississippian lime 1,385 ft., 6-in. 1,423 ft., drilling 1,525 ft.

### Edgar County

Levy et al 1 Cockroft . . . . . .SW SE SE 11-12n-11w
Salem 1,195 ft., S.D. 1,205 ft.

### Edwards County

Sinclair 1 Gawthorp . . . . . NE SE NE 16-1s-14w
Set 10-in. 151 ft., Menard 2,169 ft., Waltersburg 2,196 ft., Waltersburg sand 2,254 ft., Vienna 2,301 ft., Tar Springs 2,307 ft., Tar Springs sand 2,331 ft., drilling 2,375 ft.
R. B. Martin 1 Lester . . . . . W½ SW SW 19-2s-10e
Aux Vases 3,236-50 ft., McClosky 3,339-51 ft., 1-hr. D.S. test 3,339-51 ft., received 2,650 ft. oil and 150 ft. salt water, 5½-in. 3,351 ft., waiting on cement.

### Franklin County

E. S. Adkins 1 Old Ben Coal-F NE NW SE 36-7s-2e
Location, first report.
Yingling et al 1 Cyrus Webb (was Thurmond) E½ E½ SW SE 16-5s-4e
First report, machine on ground.
Shiek & Buerkle 1 Akin . . . . . .SE SE SE 16-6s-4e
First report, 10-in. 100 ft., drilling 210 ft.
Myers Drlg. 1 Rice . . . . . .NE NW SE 26-6s-2e
T.D. 2,129 ft., Menard 1,983 ft., Tar Springs 2,123 ft., 5½-in. 2,123 ft., waiting on cement.
Adkins 1 Old Ben Coal-A . . . . . .SE NE NW 29-6s-2e
Tar Springs 1,943 ft., cored 1,946-56 ft., received 4-ft. broken sand and shale, slight show oil, drilling 2,500 ft.
E. S. Adkins 1-C Orient . . . . . SW SW SW 36-6s-2e
Tar Springs 2,057 ft., Glen Dean 2,159 ft., Hardinsburg 2,202 ft., Cypress sand 2,453 ft., Paint Creek 2,530 ft., Benoist 2,654 ft., Renault 2,670 ft., Aux Vases 2,704 ft., cored 2,707-14 ft., drilling ahead.
Stewart Oil 1 H. Doty . . . . . NE SE SW 26-6s-2e
First report, 10-in. 50 ft., drilling 1,020 ft.

### Gallatin County

Arrow Drlg. 1 John Hancock Life NW NE SW 4-9s-8e
First report, 10-in. 45 ft., drilling 350 ft.
R. B. Martin et al 1 Clayton . . . S½ SE SW 16-9s-10e
Rig, first report.
Ryan et al 1 Crunk . . . . . .N½ NE NW SW 9-8s-9e
S.D. 1,905 ft.

### Hamilton County

Youngblood 1 Johnson. . . . . .SE NW NW 27-6s-6e


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Glen Dean 2,485 ft., Hardinsburg 2,540 ft., Golconda 2,628 ft., Barlow 2,739 ft., Cypress 2,745 ft., Cypress sand 2,795 ft., Paint Creek sand 2,841 ft., Benoist 2,963 ft., Renault 2,991 ft., Aux Vases sand 3,065 ft., 30-min. D.S. test 3,098-3,106 ft., received 165 ft. oil-cut mud, drilling 3,115 ft.

**Henry County**

O. Behrens 1 Patton.....SE SE SW 1-17n-3e
Old well drilling deeper, old T.D. 725 ft., drilling 787 ft.

**Jackson County**

Barton & Shipman 1 P. Maharry NE NE SE 20-9s-3w
Drilling 1,320 ft., corrected depth.

**Jasper County**

Lain O. & G. 1 C. E. Henry-A SW NW NW 9-6n-10e
Rigging up standard tools 2,826 ft.

**Jefferson County**

L. & W. Drlg. 1 C. O. Sargent..NE SW NW 22-1s-2e
Benoist 1,931-37 ft., show oil, S.D. 1,937 ft.

**La Salle County**

O. L. Greer 1 Sam Davis estate SW SW SW 23-35n-2e
Jordan 715 ft., Fontenbleau 770 ft., Franconia 935 ft., S.D. 986 ft.

**Lawrence County**

W. Payne 1 H. Payne.....NW SW NW 20-3n-11w
Drilling 1,450 ft.

**Madison County**

Alch & Carroll 1 Rinkel.....SE NE NW 33-5n-6w
Benoist 765-805 ft., Aux Vases 826-31 ft., Ste. Genevieve 870 ft., Rosiclare 875 ft., drilling 1,063 ft.

**Marion County**

Perry et al 1 Ehart.....SW SE SE 12-4n-1e
First report, spud and S.D.
Hudson-Hess 1 B. Young.....SW SW SW 7-2n-2e
Location, first report.
Valbert 1 Logan.....E½ SE SW 25-4n-1e
S.D. 80 ft.

**Montgomery County**

H. C. Detrick 1 W. H. Barnes NW NE SE 20-10n-2w
Drilling 1,810 ft.

*(Continued on Page 101)*

## Kentucky Fields

*(Continued from Page 97)*

County and is making 25 bbl. of oil per day. The well. 1 Gracie Stepp, on Black Log Creek, was completed at a total depth of 1,255 ft. The Warfield Natural Gas Co. drilled the well and Virginian Gasoline Co. has taken it over. This is a new territory 3 miles southeast of Inez.

The Virginian Gasoline & Oil Co. hit a dry hole at 1,365 ft. in 6 W. H. Blankenship, on Rock Castle Fork of Wolf Creek. The rig is being moved to location of No. 7 on the same farm.

The deep-test operation on the L. C. Bailey farm near Oil Springs shut down at the 4,983-ft. mark in Toachin because of engine trouble. Cumberland Petroleum, operator, expects to start again soon.

Three gas wells have been completed and a fourth has reached its total depth this week in eastern Kentucky.

The Kentucky-West Virginia Gas Co. made the locations for nine new wells this week and now has over 35 rigs, either in operation or the locations being prepared for immediate drilling. These intensive activities are the result of this firm's drilling program recently announced.

Kentucky-West Virginia Gas & Oil Co. 5291 B. G. D. er on Mill Creek in Knott County, 119,000 cu. ft. of s, shale, 315 lb. rock pressure in 24 hours, total pth 2,993 ft.

Kentucky-West Virginia Gas Co. 5296 J. G. Carlisle, on Cold Water Fork in Martin County, 852,000 cu. ft. of gas, 365 lb. rock pressure in 24 hours, total depth 2,415 ft.

Kentucky-West Virginia Gas Co. 5299 Richard Hall, on Dick Hall Branch of Right Beaver Creek, in Knott County, 367,000 cu. ft. of gas with 515 lb. rock pressure, 24 hours, Maxon 1,426 ft.

### EASTERN KENTUCKY DRILLING OPERATIONS

**Johnson County**

Inland Gas Corp. 222 C. F. Conley, near Paintsville, 1,987 ft., Corniferous.

**Lee County**

W. M. Wireman 11 E. S. Moore, Little Sinking, 825 ft.

**Floyd County**

Kentucky-West Virginia Gas Co. operations:
601 Crit Mitchell, Mud Creek, 2,343 ft., Sunbury shale.
610 Elijah Akers, T.D. 2,675 ft., white slate.
617 Chris Goble, Buffalo Creek, 860 ft., slate.
620 M. A. Davidson, Hurricane Branch of Daniels Creek, 473 ft., slate.
622 F. M. Rice, Akers Branch of Prater Creek, location.
623 Nelson Boyd, Hunts Fork of Prater Creek, location.
625 Benjamin Burga, Daniels Creek, location.
5290 Martha Alley, Frazier Creek, 2,450 ft., Weir.
5295 James Harold, Head Cow Creek, 2,336 ft., shale.
5300 Solomon Akers, Branham Creek, 963 ft., Salt sand.
5301 James C. Jones, 95 ft., slate.
5305 John Hamilton, Mitchell Fork, rigging up.
5307 James Stratton, Shop Branch, 852 ft., sand.
5309 T. T. Kendricks, Cow Creek, building road.
5310 Martha Alley, Frazier Creek, building road.
5311 James Osborne, Osborne Branch, moving.
5312 A. Johnson, location.

**Knott County**

Kentucky-West Virginia Gas Co. operations:
528 Joseph Hall (deepening), 2,078 ft., Weir.
616 Lark Slone, Jones Fork, rigging up.
624 Joe King, Bates Branch, 1,510 ft., Salt sand.
5288 David Martin, 1,125 ft., Salt sand.
5291 B. G. Dyer, Mill Creek, T.D. 2,993 ft., 119 m shale, 315 lb. R.P.
5297 Jesse Bates, 1,500 ft., Salt sand.
5299 Richard Hall, Dick Hall Branch of Right Beaver Creek, T.D. 1,424 ft., 367 m, Maxon, 515 lb. R.P.
5304 Benjamin Smith, 815 ft., slate.
5306 Levisa Thacker, Mill Creek, idle.
5308 William Triplett, Long Fork of Jones Fork, setting machine.
Inland Gas Corp. operations:
219 Sylvania Cornett, Big Branch of Troublesome Creek, 1,800 ft., Salt sand, fishing.
220 Hindman Settlement School tract, Smith Branch of Carr Creek, 360 ft., slate and shell.

**Pike County**

Kentucky-West Virginia Gas Co. operations:
612 F. J. May, Island Creek, 1,845 ft., Big lime.
613 N. J. Boyd, 198 ft., slate.
614 John B. Leslie, Caney Creek of Jones Creek, 810 ft., Salt sand.
615 A. H. Blackburn, Jones Creek, setting machine.
618 T. B. Blackburn, Johns Creek, building road.
619 Lena Collinsworth, Dock Jackson Branch, moving.
621 J. M. Taylor et al, Brushy Fork, setting machine.
626 J. C. Mulling, Brushy Run, building road.
627 Kentucky Maynard, Kentucky Maynard, location.
5289 Green Thacker, lower Pompey Branch of Levisa Fork, 1,599 ft., Maxon.
5293 Thomas Ford, Ford Branch, 2,126 ft., Big lime.
5294 Tandy Howell, 2,800 ft., Berea.
5302 James W. Bevins, Sloane Branch, 580 ft., slate.
5303 J. W. Vicars, 105 ft., slate.

### WESTERN KENTUCKY

**Daviess County**

Laffoon district: Cane Run Petroleum Co. 2 J. L. Magan heirs, drilling at 250 ft.

**Hancock County**

Victoria School district: Sands Petroleum 2 John Brown, moving in.

**McLean County**

Southwest Livermore district: Ellis 5 Stevens heirs, 60 bbl., 60-qt. shot, Barlow sand 1,349-62 ft., T.D. 1,402 ft.

**Ohio County**

Oak district: Cumberland 41 Rolla Richards, 10 bbl., 60-qt. shot, Jett sand 337-66 ft., T.D. 375 ft.
Friendship Church district: Scholl 8 C. E. Royal, drilling at 500 ft.


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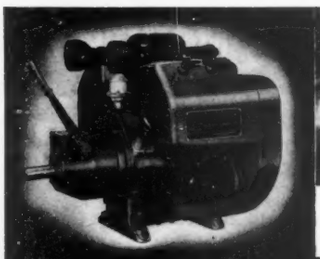

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# Lakeview Structure Wildcat Testing; Deep Sand at Hull

By NEIL WILLIAMS

HOUSTON, Tex., May 5.—Interest in the Texas Gulf Coast district was centered on the Lakeview area, Wharton County, where preparations were being made to test W. R. Davis Co., Inc., 1 Hartman, located about 3 miles north of the town of El Camp in Section 10 of the I.&G.N. Survey. Total depth of the hole is 6,752 ft., and 7-in. casing was cemented at 4,680 ft. preparatory to testing sand with an oil show at 4,538-40 ft. The Discorbis was topped at 3,694 ft., Heterostegina at 3,784 ft., Textularia Warreni at 5,575-85 ft., and the Jackson at 6,098-6,127 ft. Lakeview has been looked upon as a favorable prospect for a number of years, and several tests have been drilled in the general area. The present test is located about 2 miles due west of Smith & McDannald 1 Mitchell which was plugged back from a total depth 6,875 ft. and completed as a dry-gas well in sand at 3,185-99 ft.

*HALLS BAYOU.*—In the Halls Bayou area, Brazoria County, preparations were being made to test Strake 1 Griffith which is bottomed in a sidetracked hole at 10,389 ft. In a core from 10,316-33 ft., 18 ft. was recovered, of which 12 ft. was shale and sandy shale with an oil odor, 4 ft. of sand with an oil odor and 2 ft. of shale. From 10,333-42 ft., 7 ft. of shale was recovered. This is approximately the same depth that sand was cored in the original hole, but due to mechanical trouble caused by excessive gas pressure no successful test was ever made.

## SUMMARY OF COMPLETIONS

| | No. | Bbl. | Footage |
|---|---|---|---|
| Oil wells: Lolita | 3 | 935 | 24,707 |
| West Ranch | 6 | 776 | 34,097 |
| Other fields | 8 | 2,584 | 56,386 |
| Gas wells: Fields | 1 | ..... | 4,739 |
| Dry holes: Fields | 3 | ..... | 22,579 |
| Wildcats | 1 | ..... | 6,536 |
| Total | 22 | ..... | 149,044 |

*OYSTER BAYOU.*—Sun 3 Jackson, completed the previous week to open a new field 2 miles west of the Willough Slough field, Chambers County, flowed 666 bbl. of 35.9-gravity oil per day through a ¼-in. choke. The field has been named Oyster Bayou, and additional development is expected to be announced in the near future. Geological markers on the discovery well are as follows: Discorbis 6,965 ft., large Discorbis 7,177 ft., Gyroindina 7,177 ft., Heterostegina at 7,544 ft., and the Frio at 8,137 ft.

*HULL.*—Deeper production for the old Hull field, Liberty County, was indicated for the northeast flank as South Oil Co. 1-C Merchant tried to blow out from a total depth of 5,902 ft. and the well is flowing oil and drilling mud through flow lines. The company will attempt to recover stuck drill stem at 3,450 ft. Although deeper production has been developed on the south flank, the present test is believed to be the only deep test drilled in this particular area. The well is located several hundred feet west of shallow production which extends around the entire dome.

### Wildcat Locations

Southeast of Davis Hill, and north of the Hardin field in the Edward Tanner Survey, Liberty County, Sun Oil Co. staked location for 1 Grayburg Timber Co., 2,736 ft. east of the east line of the west 366 acres of an 870-acre tract, and 467 ft. south of the south line of tract.

In the northwest corner of Lavaca County and just southeast of Moulton, Herton Oil Co. staked location for 1 Hohmann, 467 ft. from the north line and 467 ft. from the east line of a 115-acre tract in the William Taylor Survey. This is a projected Wilcox test, being located across the county from the Vienna field, which is the only producing field in the county. Another Wilcox operation which will be watched with interest is David B. MacDaniel 1 Baldwin located in the Tamina area, southern Montgomery County, which is preparing to deepen from its total depth of 9,741 ft. This well has logged interesting showings in the Wilcox, but no commercial production has been developed.

*GARWOOD.*—A drill-stem test at W. R. Davis 1-B Brownson, in Garwood area, Colorado County, recovered several hundred feet of pipe-line oil on 16-minute drill-stem test in the Cockfield sand at 6,102-10 ft. This is a projected 10,000-ft. Wilcox test located about midway between the company's 1 Brownson, completed earlier in the year as a distillate producer in the Wilcox sand at 9,423-38 ft., and the field proper in which several wells have been completed as distillate producers in the lower Cockfield sand. The well is drilling ahead and no production test is expected to be made until the Wilcox formation has been cored.

*OLD OCEAN.*—Location for an interesting test was made in the Old Ocean field, Brazoria County, by Harrison & Abercrombie, who are moving in material for 9 Armstrong located on the northwest side of structure in the Polly & Chance Survey, Matagorda County. The field continues to be one of the most active in the district as some 12 operations are reported and the limits of the field are still undefined in several directions.

### TEXAS GULF COAST COMPLETIONS

**Brazoria County**

Old Ocean: Harrison & Abercrombie 3 Ashley Wilson, 684 bbl., ¼-in. choke, top sand 10,098 ft., T.D. 10,241 ft.
West Columbia: Texas 22 Phillips, 331 bbl., ¼-in. choke, perf. casing 5,657-98 ft., T.D. 5,764 ft.

**Chambers County**

Oyster Bayou: Sun 3 Jackson, 666 bbl., ¼-in. choke, perf. casing 8,250-80 ft., T.D. 8,294 ft.
Red Fish Reef: Humble 19-A-247 State, 133 bbl., 9/64-in. choke, perf. casing 8,697-8,707 ft., T.D. 9,332 ft.

**Fort Bend County**

Thompson: H. N. Naylor 10-B Gehr, dry, T.D. 7,904 ft.
Wildcat: J. G. Mayo 1 G. W. Armstrong, top Heterostegina 5,293 ft., round Marginulina 5,421 ft., flat Marginulina 5,451 ft., dry, T.D. 6,536 ft.

**Jackson County**

Lolita: Luling 2 Johnson, 677 bbl., 3/32-in. choke, perf. casing 6,397-6,401 ft., T.D. 6,405 ft.
Magnolia 5 J. H. Hamilton, 177 bbl., 9/64-in. choke, sand 5,937-41 ft., T.D. 5,945 ft.
Skelly 1 Mitchell, 81 bbl., 7/64-in. choke, perf. casing 5,947-50 ft., T.D. 5,952 ft.
West Ganado: Pure 2 Spacek, 168 bbl., 10/64-in. choke, perf. casing 5,986-98 ft., T.D. 6,815 ft.
West Ranch: American Liberty 5 Ward, 48 bbl., ⅛-in. choke, perf. casing 5,550-62 ft., T.D. 5,625 ft.
W. S. Boyle 3 L. Ranch, 79 bbl., 9/64-in. choke, perf. casing 5,544-54 ft., T.D. 5,620 ft.
Darby Petroleum Co. 5 Turner, 105 bbl., ⅛-in. choke, perf. casing 5,759-65 ft., T.D. 5,767 ft.
Magnolia 135-A West Ranch, 189 bbl., 9/64-in. choke perf. casing 5,748-52 ft., T.D. 5,755 ft.
Magnolia 144-A West Ranch, 293 bbl., ⅛-in. choke, perf. casing 5,760-66 ft., T.D. 5,770 ft.
Magnolia 146-A West Ranch, 62 bbl., 8 hr., ¼-in. choke, perf. casing 5,540-52 ft., T.D. 5,560 ft.

**Liberty County**

Hull: Gulf 30 Morris & Phillips, 445 bbl., ¼-in. choke, top sand 2,892 ft., T.D. 2,910 ft.
Esperson: General Crude 42 Esperson, 27 bbl., 18 hr., ¼-in. choke, T.D. 7,692 ft., plugged back T.D. 7,025 ft.

**Matagorda County**

Buckeye: United North & South Development Co. 3 Stoddard, dry, T.D. 8,277 ft.

**Waller County**

Sealy: Kirby Petroleum Co. 1 Donigan, dry, T.D. 6,398 ft.

**Wharton County**

Withers: Humble 42 Cockburn, 130 bbl., ⅛-in. choke, top sand 5,533 ft., T.D. 5,538 ft.
Pickett Ridge: Texas 3 Wittig, gas well, perf. casing 4,660-70 ft., T.D. 4,739 ft.

### TEXAS GULF COAST DRILLING REPORT

**Brazoria County**

Glenn McCarthy 1 Marmion, Bailey's Prairie area, S. Carter Sur., drilling shale 4,230 ft.
Pure 1 Greenameyer, Manor Lake area, J. E. B. Austin Sur., coring 8,562 ft.
Pan American 2 Koontz, southeast flank Damon Mound, drilling shale 5,223 ft.
West Production Co. 1 A. M. Abell, Pearland area, H.T.&B. Sur., drilling shale 6,604 ft.

**Colorado County**

W. R. Davis 1-B Brownston, West Colorado field, drilling shale 5,758 ft.

**Jackson County**

Moore & Ahern 1 Tony, Mauritz area, top Frio 5,313 ft., drilling shale 6,450 ft.

*Continued on Page 114)*

## Illinois Fields

*(Continued from Page 100)*

A. M. Lacey 2 Luddeke.....SE NW NW 28-9n-4w
Chattanooga 1,905 ft., Devonian 1,970 ft., drilling 1,995 ft.

**Pulaski County**

R. G. Williams et al 1 W. L. Richey.....
NE SE SW 9-15s-1e
Fishing 872 ft.

**Randolph County**

Ruwaldt 1 Schuette.....NE NE SW 35-5s-5w
Base Pennsylvanian 547 ft., Menard 562 ft., Waltersburg 630 ft., Tar Springs 668 ft., Glen Dean 764 ft., Golconda 814 ft., Barlow 934 ft., Cypress 942 ft., Cypress sand 967 ft., 5½-in. 984 ft., T.D. 990 ft., waiting on cement.
Gode & Murphy 1 McIntyre.....SW SW SW 10-5s-5w
T.D. 585 ft., underreaming 8-in. 550 ft.
J. R. Rankin 1 B. Bierman.....SW SW SE 3-7s-5w
Drilling 1,045 ft.

**Richland County**

P. Osborne 1 Bowers.....SW SW SE 34-3n-13w
First report, 10-in. 137 ft., waiting on cement.

**St. Clair County**

Gus Kunze 1 McCurdy.....SE SW SW 29-3s-6w
Drilling 405 ft.
G. A. Morris 1 V. Rasp.....E½ NW NW SW 32-2n-7w
Cypress 405 ft., Paint Creek 458 ft., Benoist 503 ft., Fredonia 601 ft., McClosky 623 ft., St. Louis 670 ft., S.D. 713 ft.
Burgess 1 Eidman.....NW NW SE 18-1s-6w
S.D. 175 ft.

**Saline County**

Thompson 1 O. Carter.....NW NE SE 16-8s-7e
Set 10-in. 68 ft.

**Shelby County**

Rose & Durbin 1 Flenner.....SW SW SE 9-10n-4e
Drilling 1,785 ft.

**Tazewell County**

Bartelmay 1 Mathis.....SW NW SW 24-25n-3w
Devonian 1,160 ft., drilling 1,233 ft.

**Vermillion County**

Sylvester 1 Trisler.....NE NE SE 30-18n-13w
Set 10-in. 185 ft., drilling 1,055 ft.

**Wabash County**

Indiliky Oil 1 Price estate.....NE SE SE 23-1n-12w
Drilling 1,875 ft.

**Washington County**

C. H. Smith 1 Hunleth.....SE NW SW 30-3s-14w
First report, Menard 520 ft., drilling 540 ft.

**Wayne County**

Gordan-Muhlbach 1 P. Muhlbach W½ SE SW 36-2n-8e
Base Pennsylvanian 2,245 ft., Menard 2,265 ft., Tar Springs 2,418 ft., Glen Dean 2,504 ft., Hardinsburg 2,520 ft., Golconda 2,577 ft., Barlow 2,675-88 ft., Cypress sand 2,703 ft., Benoist 2,957-62 ft., slight show oil, Ste. Genevieve 3,022 ft., drilling 3,047 ft.
Pure 1 T. R. Michels-A.....W½ SW NW 25-2n-7e
T.D. 3,065 ft., testing.

**White County**

C. D. Neff 1 Stum.....NE NW NW 22-5s-14w
Spud, first report.
L. B. Jackson 1 Hanna.....NE NE NE 28-5s-10e
Base Pennsylvanian 1,878 ft., Degonia 2,018 ft., Clore 2,061 ft., Palestine 2,140 ft., Palestine sand 2,163 ft., Menard 2,225 ft., Waltersburg 2,294 ft., Vienna 2,352 ft., Tar Springs 2,356 ft., Tar Springs sand 2,395-2,465 ft., Glen Dean 2,475 ft., Hardinsburg 2,510 ft., Golconda 2,573 ft., Barlow 2,700 ft., Cypress 2,706 ft., Cypress sand 2,801 ft., cored 2,883-95 ft., drilling 2,925 ft.
Ryan et al 1 Pomeroy.....NE NE SE 4-6s-10e
Set 10-in. 111 ft., waiting on cement.
Sallee Bros. 1 Emil Doerr.....NE NE SE 21-4s-4e
Set 10-in. 70 ft., drilling 595 ft.
Continental 1 Ackerman.....NE NW NE 25-5s-10e
Drilled out to 2,838 ft., swabbed 30 bbl. oil a day, no water, 8-qt. shot in Benoist, testing.

**Whiteside County**

J. S. Feltus 1 Hopkins.....NW NE NE 35-21n-6e
First report, Trenton 464 ft., T.D. 477 ft., running 6-in.
J. F. Morse 1 Sheldon.....NW SW NW SE 11-19n-7e
First report, drilling 540 ft.

**Williamson County**

Wiser Oil 1 U. S. Coal & Coke....NW NW NW 15-8s-2e
Location, first report.

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# Among the Drilling

W. B. OMOHUNDRO, drilling contractor and producer of Wichita Falls, Tex., is attempting commercial completion of a wildcat drilled for Benson & Benson in Montague County, North Texas. It is 1 Seay, 330 ft. from the north line and 2,506 ft. from the east line of the J. P. Ownsby Survey, just southeast of the Ringgold field. At last reports the well was swabbing and flowing by heads from the conglomerate of Bend age at a total depth of 5,762 ft.

WYNN CROSBY Drilling Co., Houston, Tex., is preparing to make a production test of Strake 1 Griffith, a wildcat located in the Halls Bayou area, Brazoria County, Texas, after interesting showings were logged below 10,000 ft.

ROWAN Drilling Co., Houston, Tex., has reached a depth of 7,500 ft. in the company's joint semiwildcat located in the Buttermilk Slough area, Matagorda County, Texas.

JOHNSON Drilling Co., eastern Texas contracting firm, is moving rotary rig from the Long Lake field in Anderson County to a wildcat site 7 miles to the east for the drilling of an exploratory test for Carter-Gragg Oil Co. on the southwest flank of the Butler salt dome in Anderson County, eastern Texas. The test is to be 1 Robert Mims, J. M. Lyons Survey, between the communities of Butler and Oakwood. It will seek production in the Woodbine sand.

NOBLE Drilling Co., Tulsa, has rigged up a rotary rig for a deep test in Fallon County, Montana, to be drilled for Carter Oil Co. The wildcat is located on the Cedar Creek anticline, 35 miles southeast of the town of Baker, near the Dakota border. Location is in C SE SW 19-4n-62e. Carter has taken over the oil rights of the large holdings of Fidelity Gas Co., wholly owned subsidiary of Montana-Dakota Utilities Co., and is preparing to drill to 9,000 to 11,000 ft. to test all formations as deep as the Cambrian. The structural high of the area was determined by geophysical survey following failure of wells farther north to produce.

RICHMOND Drilling Co., Midland, Tex., has spudded and is drilling below 1,000 ft. at a wildcat for J. W. Brown, Inc., as his 1 State, about 6 miles west of Lovington in Lea County, New Mexico. The test is contracted to 5,300 ft. and is located in the center of Lot 11, Section 4-16-35, about 8 miles northeast of nearest production in the Vacuum field.

NEWELL & CHANDLER, Montana drilling contractors, are rigging up rotary on a deep test on the Charles lease, southeast of Cat Creek field in Montana, following the California Co. taking over the test. The wildcat was carried to the top of the Madison lime at 3,548 ft. by Arro Oil & Refining Co. and the new owners plan on carrying hole to 6,500 ft. Much of the hole is to be cored to obtain complete information on formations below the Madison. Carl Drew, Jr., is in charge of drilling for Newell & Chandler.

FALCON-SEABOARD Drilling Co., Houston, Tex., spudded W. R. Davis, Inc.'s projected deep test located near the McAllen city limits in Hidalgo County, Texas, and the company is starting a new well in the Ville Platte field for Gulf Refining Co. Another operation is reported in the Fig Ridge field, Chambers County, for Sun Oil Co.

HARRY L. EDWARDS Drilling Co., Houston, Tex., has moved another rig to the Old Ocean field, Brazoria County, Texas, where contract for a 10,000-ft. test was received from Fidelity Oil & Royalty Co. Two other operations are reported in the same field for Harrison & Abercrombie. Another producer was completed in the Esperson field, Liberty County, Texas, for General Crude Oil Co., while in the Dickinson field, Galveston County, Texas, one well was completed for the Pan American Production Co., and the rig will be moved to a new location for the Coast Petroleum Co.

MORRIS & HAMILTON Drilling Co., Houston, Tex., drilling for W. R. Davis, Inc., in the Garwood area, Colorado County, Texas, logged an interesting showing in 1-B Brownson, and is drilling ahead after a drill-stem test in the Cockfield sand recovered pipe-line oil. This is a projected 10,000-ft. Wilcox test, and the well will be drilled to this horizon before completion is attempted. In the Lakeview area, Wharton County, Texas, casing was cemented on the same company's 1 Hartman, preparatory to testing sand with an oil show at 4,538-40 ft. Two other rotaries are running in the southern part of the Rincon field, Starr County, Texas, for the same company.

C. I. Drilling Co., Houston, Tex., is operating one rig in the Driscoll field, Duval County, Texas, for Continental Oil Co., and another rotary is running in the Lissie area, Whar-

*Lofland Bros. crew at Thompson's field, Fort Bend County, Texas. Standing: C. J. Foster, driller; L. F. Creswell, Eddy Escobar, J. H. Krolczyk. Kneeling: W. O. Plunkett and E. D. Conger*

# Contractors

ton County, Texas, for Lon Cron 1 McGill, a wildcat located in the A. Schwatz Survey.

TWIN Drilling Co., Tulsa and Grandville, Mich., has set 4½-in. casing at 1,317 ft. at Bundy Hill Natural Gas & Oil Co. 1 Winters in the Broomfield area of Isabella County, Michigan. In Deerfield area of Isabella County, Twin was drilling below 475 ft. at L. & S. Drilling Co. 1 Winesburg, and at last reports was waiting on cement to set before completing Michigan Cities Natural Gas Co. 1 Diehl in Broomfield Township.

MANNING & MARTIN, Inc., Denver, Colo., are moving in equipment for General Petroleum Corp. 31-27-P. ¼-mile south outpost to the Cole Creek field, 13 miles northeast of Casper, Wyo. Located in NE NE NW 27-35n-77w, the well is the first of five tentative locations in the company's drilling campaign at Cole Creek, contractors for which are Manning & Martin. The company has also received contract for drilling Medicine Bow Oil Co.'s deep test to the Sundance on the East Allen Lake structure in Carbon County, Wyoming. The test will be located on the Richards patented land, embracing N½ 18-22n-78w.

SUPPES & SUPPES, drilling contractors of Artesia, N. M., are drilling below 500 ft. in red sand and shale at Fullerton Oil Co. 1 State, a wildcat in northwestern Lea County, New Mexico. The scheduled 5,300-ft. test is located in NE SE 18-16s-33e, 7 miles north and slightly east of the Maljamar pool.

BIG CHIEF Drilling Co., Oklahoma City, Okla,. has the contract for a wildcat 1 mile south of the discovery well of the Guthrie pool in Logan County, Oklahoma, the North American 1 Hirzel, NE NW SE 17-17-1w, and was nearing the pay zone at the end of the week. The company also announced its intention to drill its own wildcat, 1 Trim, NE NE SE 13-17-1w, nearby.

BREWER Drilling Co., Artesia, N. M., last week completed its 2 Williams in the Dayton area of Eddy County, New Mexico, flowing at the rate of 27 bbl. of oil per day. Located in SE NW 25-18s-26e, the producer was completed at a total depth of 1,049 ft.

ROBERT W. ATHA, drilling contractor and operator of Mount Pleasant, Mich., is moving in material for a wildcat to be drilled for Gulf Refining Co. in Surrey Township, Clare County, Michigan. The new test is the 1 Woodward in C N½ NW SE 24-17n-5w. In Lincoln Township of Clare County, the contractor was drilling below 1,900 ft. at Gulf 1 Frackelton, C NE SE 20-18n-5w. The contractor is also moving in rig for Sun Oil Co. 2 Ida Hollister in Butterfield Township, Missaukee County, Michigan.

TURNER Drilling Co., Mount Pleasant, Mich., has rigged up standard tools for drilling Turner Petroleum Co. 1 Prichard in Sylvan Township, Osceola County, Michigan. At Turner Petroleum 1 Weigert in the Freeman field of Clare County, Michigan, the contractor is drilling below 2,800 ft.

KIOWA Drilling Co., Tulsa, was digging pits for Perry A. Thayer 1 Waydziak, NW NW NW 25-15-12w, a wildcat 2½ miles due east of the Dubuque pool and 4 miles southeast of the Greenvale pool in Russell County, Kansas.

E. E. KIRKPATRICK has the contract for Mid-Continent Petroleum 1 Felix, a wildcat in SE SW SW 11-9-9, Hughes County, Oklahoma, and will drill to the Wilcox sand.

SUMMITT Drilling Co., Tulsa, completed a wildcat southwest of the Rogers & Rogers field in Montague County, Texas, for Sinclair Prairie Oil Co., its 1 Clingingsmith. Located in the SW cor. Block 149, J. H. Belcher subdivision, the well rated a Railroad Commission potential of 1,160 bbl. daily, based on a 3-hour flow, from a depth of 6,119-31 ft.

MALJAMAR Drilling Co.. Artesia, N. M., completed its 12-A Mitchell in the Maljamar field of Eddy County, New Mexico, for a flow of 40 bbl. of oil daily through tubing after acidizing, total depth 3,984 ft. The 12-A Mitchell is located in SW NW 19-17s-32e.

PARKER Drilling Co., Tulsa, at last reports was drilling at 7,290 ft. at Gulf Refining Co. 1 Bateson in Monitor Township, Bay County, Michigan. The test was sidetracked at 6,285 ft. following a blowout and fire which destroyed the rig and resulted in sticking the drill pipe. The test, carried to an old total depth of 7,776 ft., is located in S½ SE SE 2-14n-4e.

ROTARY Drilling Corp., of San Antonio, Tex., has been awarded contract by Lewis Production Co for new development in the Alfred field of Jim Wells County, Texas. The company also has contract for drilling in the Tar Springs field of Wabash County, Illinois.


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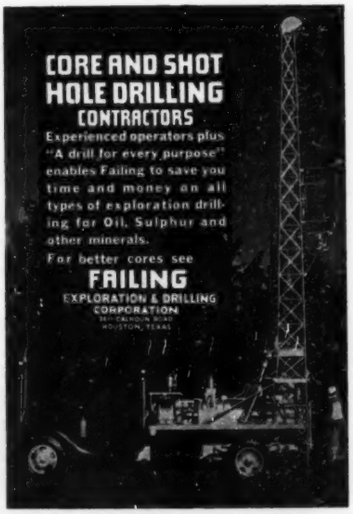
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# Important Tests Under Way; No Completions Reported

By
T. R. INGRAM

DENVER, Colo., May 5.—Drilling operations in the Rocky Mountain area are showing an upward swing with the coming of spring and a number of wells shut down for the winter are resuming and several important wildcats are getting under way. There was one recompletion, Stanolind 24 Rosenberg, in the Frannie field, for 425 bbl. after deepening 79 ft. For the first time in months the week passed without any completions in the most active fields.

The West States Petroleum Corp. is planning a deep test this summer on the Canyon Creek structure in Moffat County, Colorado. Stanolind will test the middle fault block in the Frannie field. The Carter Oil Co.'s 10,000-ft. test in eastern Montana has begun rigging up, and the California Co.'s Devonian test in the Cat Creek district is almost ready to resume. Cut Bank had two and Kevin-Sunburst one new operation.

## COLORADO

**El Paso County**

F. F. Hintze 1 State.....CEL SE SE 16-11s-60w
T.D. 2,030 ft., underreaming 6⅝-in. to 2,012 ft., show gas in shale at 1,850-90 ft.

**Jefferson County**

Ruby Hill 1 Braden.....SE SE SE 24-4s-69w
T.D. 4,814 ft., cleaned out to bottom and lowered 4¾-in. to 4,804 ft., show of oil.

**La Plata County**

E. B. Klem 1 Olbert.....NW SW 9-35n-12w
S.D. 4,050 ft., account of weather.
Nick Spatter 1-X Bryce.....SW SW 31-33n-9w
S.D. 4,428 ft.

**Moffat County**

A deep test on the Canyon Creek structure, which lies about 6 miles west of the Hiawatha field, is scheduled for this summer by the West States Petroleum Corp., formerly the Italo Petroleum Corp. Contract has not yet been awarded, but probably will go to Manning & Martin, Inc. Tentative location is C SE SE 10-12n-101w, and will be known as 1 Unit, also as 2 Humphrey-Government. Extensive geological work has been in progress in the area and 14,505 acres are located within the unit.

C. R. Privett 1 Strelling, a location made 1¼ miles south of Privett 1 Sutton, on the Dry Lake structure, last January, is getting under way. Isador Spangler has the contract. The Sutton well is shut down at 2,335 ft., probably in the top of the Sundance.

C. R. Privett 1 Strelling.....NE SE SE 12-5n-96w
Rigging up cable tools.
Mountain Fuel Supply 8 Florence Wilson.....
C SE NE 22-12n-100w
Waiting on rotary from 7 Wilson.
Mountain Fuel Supply 7 Wilson.....
NE SW NW 23-12n-100w
T.D. 2,341 ft., testing.
Mountain Fuel Supply 3 Musser.....
CNL NW SW 5-11n-97w
Drilling 5,601 ft., drill-stem test of sand at 5,273-83 ft., open 1 hr., showed 500 ft. of oil and 45 ft. of salt water.

**Park County**

South Park Oil 1 Lemar, NE NE SE 34-11s-75w, South Hartsel dome, which started pulling casing at 7,725 ft., total depth, has left the 12-in. in the hole and will test sand at 1,600 ft. which had a good show of oil on the way down.

**Pueblo County**

E. A. Scriven 1 Kieffer.....SE SW 21-21s-66w
Drilling 100 ft., Columbia Heights district.

**Rio Blanco County**

Texas Co. 6 Unit.....NW NE SE 27-3n-94w
Drilling 4,127 ft.

**Routt County**

Mid-Colorado Pet. 1 Omholt....NE NE SE 29-4n-87w
Drilling 3,091 ft. in top of Sundance.

## WYOMING

**Carbon County**

Sinclair-Wyoming 23-A Wertz..NE NE NE 12-26n-90w
Building rig.
Sinclair-Wyoming 22-A Wertz...SE SE SE 1-26n-90w
Drilling 2,010 ft. with rotary.
Sinclair-Wyoming 17-A Wertz ..NE NE NW 7-26n-89w
Drilling in Tensleep at 6,188 ft., top 5,899 ft.
Sinclair-Wyoming 19-A Wertz...SE SW SW 6-26n-89w
Drilling 5,967 ft. in Tensleep, top 5,826 ft.
Sinclair-Wyoming 5-C Mahoney...C NW SE 34-26n-88w
Drilling 4,208 ft.

**Natrona County**

Casper Creek Oil 1 State.....SW SW NW 36-36n-81w
T.D. 2,386 ft., running 5 $\frac{5}{16}$-in.
Investors Oil 32 Government....SE SE NE 3-33n-89w
Drilling 2,448 ft. in Tensleep, 7-in. at 2,437 ft.
K. S. Albert 1 Young.....NE SE 25-32n-82w
Drilling 640 ft., first Wall Creek at 410-50 ft.

**Niobrara County**

Continental 25 Tom Bell.....SE SE SE 28-36n-65w
Building rig, first report.
Argo Oil 10 Ford.....SE SE NW 33-36n-65w
Drilling 4,512 ft.
Ohio 4 Richard & Comstock.....NE SW 32-36n-65w
Drilling 1,331 ft.

**Park County**

Stanolind Oil & Gas is building rig for a test in the middle fault block of the Frannie structure in its 21-X Rosenberg. It will go to the Tensleep. There is production in the north and south fault blocks. Contract has been let to Manning & Martin, Inc.

Stanolind 24 Rosenberg, NE SE NE 26-58n-98w, was recompleted at 3,080 ft., after deepening from 3,001 ft. for 42 bbl. in 24 hours. It was originally completed in 1931 and averaged 578 bbl. a day the last 10 days of a 65-day test. It was making 200 bbl. a day prior to starting deepening operation.

Stanolind 21-X Rosenberg....NE SW NW 25-58n-98w
Building rig, first report.
Enalpac Oil & Gas 2 McMahon O.P.C.-1.....
C SW SW 32-51n-100w
Location, first report.
Texas Co. 5 Sonners.....SE NE NE 30-51n-100w
Location.
Enalpac 3 Pauline O.P.C.-1....SW SE SE 5-51n-100w
T.D. 3,795 ft. in Tensleep, top 3,781 ft., cemented 5½-in. at 3,783 ft.

**Sublette County**

North La Barge Oil 6 Government, CNL SE NE 28-27n-113w, La Barge field, which was completed in sand at 1,030-1,145 ft., last February, for 20 bbl. a day after plugging back from 1,218 ft., has again plugged back to 1,055 ft. to shut off bottom water, and is testing.

Klumpe Syndicate 1 State...NE SW NE 28-27n-113w
T.D. 1,792 ft., cleaning out to resume.
Marvel Oil 1-L Government....SE SE SE 28-27n-113w
Drilling 227 ft.
Charles Lackey 1 Government NE SE SW 33-27n-113w
S.D. 1,650 ft.

**Sweetwater County**

Rocky Mt. Drlg. Co. 1 State..SW SW SW 36-20n-104w
T.D. 5,850 ft. in red beds, top 4,925 ft., will go to Tensleep.
Sinclair-Wyoming 96-A.....NE SE NE 10-26n-90w
Drilling 4,068 ft. in Tensleep, top 4,047 ft., 7-in. at 4,049 ft.
Sinclair-Wyoming 100-A.....NE NE NE 10-26n-90w
Drilling 211 ft.

## MONTANA

**Fallon County**

Carter Oil 1 Northern Pacific Unit C SE SW 19-4n-62e
Rigging up rotary.

**Garfield County**

California Co. 4 Charles.....C SE NW 21-15n-30e
T.D. 3,545 ft., rigging up to resume, rotary contract to Chandler & Newell.

**Glacier County**

Consolidated Gas 2 Frary-Tribal-191.....
NW SW NE 19-32n-5w
Rigging up, first report.
Anderson 4 Anderson.....NW SW NE 26-35n-6w
Building rig, first report.
Santa Rita 13 Tribal.....CSL NE SW 10-35n-6w
Running 8⅝-in. at 2,825 ft., show oil and gas in Sunburst at 2,823-25 ft.
Glacier Production 10 State, 440 ft. N of C of S line S.W. 16-33n-5w, spudded.
Santa Rita 6 Government.....C SW NW 8-32n-5w
Spudded.
Hannah-Porter 2 Tribal-189.....SE SE SE 19-32n-5w
Cemented 10¾-in. at 475 ft., top Colorado 435 ft.
Glacier Production 3 Connelly.....C SE SW 6-33n-5w
Drilling 1,435 ft., top Colorado 480 ft.
Texas 2 Jones.....C NE SW 6-33n-5w
Cemented 10¾-in. at 500 ft., top Colorado 470 ft.
Montana Headlight 4 Williams..SW SW NE 11-34n-6w
Drilling 800 ft., top Colorado 520 ft., 10¾-in. 540 ft.
Kullberg Oil 2 Tribal-185.....NW NW NW 19-32n-5w
Drilling 1,850 ft., top Colorado 520 ft., 10¾-in. 540 ft.
Glacier 4 Lookhoff.....SE SW SE 33-33n-5w
Drilling 1,940 ft., top Colorado 510 ft.
Ed Reagan 1 Tribal-194.....CEL SE NE 22-37n-7w
T.D. 3,869 ft., waiting on acid truck.

**Hill County**

Cobb-Yale 1 Government.....C SW NE 19-37n-15e
T.D. 1,480 ft., cemented 10-in. at 247 ft.

**Teton County**

R. C. Tarrant 1 Kellogg.....SW NW NE 33-27n-5w
Spudding at 200 ft.

**Toole County**

M. F. Toles 2 Blumberg.....NW NW NE 32-35n-3w
Drilling 200 ft., first report.
Coolidge & Coolidge 2 Stone.....SE SW SE 26-36n-2w
Drilling 180 ft.
Huso Brothers 2 Ellingson.....C SE SE 14-35n-3w
T.D. 1,769 ft., acidized 500 gal., no results.
E. Morton 3 Ellingson.....CNL NE NW 23-35n-3w
T.D. 1,734 ft., contact 1,713-15 ft., waiting on pumping equipment.
Rimrock Production 7 Schmidt..CSL SE NW 29-35n-3w
Drilling 1,500 ft., Sunburst at 1,477-1,500 ft., dry.
C. Leonard Smith 1 Lewis.....NE SW NW 34-33n-2e
S.D. 20 ft.
Big West 5 Ellingson.....CSL SE SW 14-35n-3w
Drilling 1,703 ft.
Ohio 7 Howling.....NE NE SE 10-35n-2w
T.D. 1,650 ft., contact 1,614 ft., good show in break at 1,648 ft.
Dunkirk Adventure 1 McKechnie..NW SW SE 2-31n-1w
T.D. 1,015 ft., underreaming 10-in.
Colonel Kevin 9 Government....C NE NW 27-35n-3w
T.D. 1,801 ft., show oil, acidized 500 gal., testing.

## NORTHWEST NEW MEXICO

**Bernalillo County**

Norins Realty 2 Pajarito.....NW NE 22-9n-1e
Drilling 2,818 ft.

**McKinley County**

Ambrosia Investors 1 Govt..SW NW NW 14-14n-10w
Spudded, Ambrosia Lakes district.

**Sandoval County**

Sieman & Boyd 1 Armijo.....SE SW 1-12n-3w
T.D. 815 ft., testing water shutoff.

**San Juan County**

Carroll & Carroll 2 Government C NW NW 12-29n-12w
T.D. 1,840 ft., 5-in. on bottom, fishing.
Red Cactus Oil 1 Tribal.....SE SE SE 35-29n-18w
Drilling 1,595 ft.

**Torrance County**

Orville J. Lee 1 Milburn.....C NW SW 36-7n-7e
Drilling 975 ft., in shale and sand.

## California Fields

*(Continued from Page 89)*

Rigging up and preparing to spud. Los Angeles County.
R. R. Bush Oil Co. 1 Smith.....7-2s-14w
Rigging up. Drilling will be done by Rocky Mountain Drilling Co. Los Angeles County.
Federal Oil Co. 2 Smith.....7-2s-14w
Rigging up rotary drilling tools. Will be drilled by Rocky Mountain Drilling Co. Los Angeles County.
Hogan Pet. Co. 8 Machado.....7-2s-14w
Location staked, spud awaiting permit. Elev. 100 ft. Los Angeles County.
Oscar Howard 1 Dominguez.....7-2s-14w
Rigging up rotary drilling equipment. Jergins Oil Co. may take over operations on royalty basis. Elev. 135 ft. Los Angeles County.
Jefferson Oil Co. 1 Smith.....7-2s-14w
Drilling 6,070 ft. in sand. 12¾-in. surface pipe cemented 773 ft. Los Angeles County.
Texas 7 Smith.....7-2s-14w
Rigging up and preparing to spud. Elev. 200 ft. Los Angeles County.

**Rosecrans Field**

Southern Cal. Pet. Corp. 1 Townsite.....12-3s-14w
T.D. 8,374 ft., P.B. 8,117 ft. 5½-in. casing cemented 8,117 ft. and gun perf. 7,964-8,117 ft. Making pumping test. Production 34 bbl., 32-gravity, cleaning up. T. P. Pike Drilling Co. is contractor. Los Angeles County.

**LOS ANGELES BASIN WILDCATS**

**Chino District**

Prado Pet. Corp. 1 Lamp.....31-2s-7w
Rigging up rotary drilling tools and preparing to spud. Elev. 560 ft. San Bernardino County.

**East Santa Fe Springs District**

Sierra Pet. Co. 1 Cole.....2-3s-11w
Grading and hauling in material. Los Angeles County.

**Orange District**

Associated 1 Olive-Orange.....19-4s-9w
Drilling 4,685 ft. in sand and shale. Elev. 175 ft. Orange County.

**Santa Ana Canyon District**

Valley Pet. Co. 1 Kraemer.....36-3s-9w
T.D. 2,750 ft. in sand and shale. Landed 6⅝-in. casing 2,750 ft. Elev. 600 ft.

## COASTAL DISTRICT

The Newhall-Castaic region of Los Angeles County and which extends over into a portion of Ventura County continues to show increased drilling and present indications point to a further gain in work during the next several months. The results of drilling in this region have been satisfactory and another discovery will result in still further encouragement and additional drilling. Early this week Barnsdall Oil Co. temporarily suspended drilling operations on its Los Angeles County jail farm property in the Castaic area and will drill another well on the property before determining the future status of the property. Top of the first Modelo zone was found at 3,880 ft. and cored top of the second Modelo zone at 4,300 ft. Both contained a fine silty oil sand with good odor and cut but was not subjected to a production test. The significant thing in connection with this well is the fact that the structure contained oil sand in two zones as this tends to indicate the possibility of finding a greater thickness and more favorable conditions in a nearby location. The first well is always the most difficult on a new wildcat structure and for this reason the log of the first well should prove of valuable aid in providing markers and other subsurface data.

On the Pico anticline, Aztec Oil Co. is making good progress but is not yet deep enough to encounter the expected Modelo formation of Miocene age. This wildcat is an important one because it will undoubtedly lead to additional drilling if successfully completed as a commercially productive well. It has special merit and will bear watching because it is located on the most prominent line of folding in the area and is well financed and thus in a position to drill down to at least 7,000 ft. if necessary to thoroughly test out the lower Modelo in the event the upper part of this formation is barren. This wildcat was located by David Wosk, Los Angeles geologist and petroleum engineer. To date several small fields have been found along the Pico anticline but in most cases these wells were completed in upper sands at comparatively shallow depths. It is thought quite probable that deeper drilling to take in the middle and lower Modelo will prove highly beneficial from a production standpoint. Oil in the Newhall-Castaic region is largely confined to Modelo shale beds of Miocene age and the lenticular character of sands of the Modelo may give rise to important production on the flanks of large folds such as the Pico anticline. The Aztec Oil Co. wildcat should determine this possibility.

Two new wildcats were started in the Newhall-Castaic region this week although it may be another few weeks before the bits actually begin making hole. St. Anthony Oil Co. has staked location for a wildcat to be drilled on the La Salle ranch in 10-3n-16w several miles south of the jail farm property of Barnsdall Oil Co. Roy W. Young, Inc., has taken over 1,300 acres on Conroy dome from R. E. Havenstrite and the initial well will be drilled in 11-4n-16w. This large lease lies about 3 miles south and east of the initial well of Barnsdall on the jail farm property. The deep test which Chanslor Canfield Midway Oil Co. is drilling in the Rincon field of Ventura County is making good progress and has looked very good at times during the course of work. The bit is now making hole at 8,300 ft. and it is the present intention to make a conclusive deep test which may entail drilling to a depth of from 10,000 to 12,000 ft.

### COASTAL DISTRICT COMPLETIONS

**Capitan Field**

Shell 1-33 Covarrubias ..... 32-5n-30w
Flowed 853 bbl., 22.1-gravity, 0.1 per cent cut, 38,000 cu. ft. gas. 58/64-in. bean. Pressures 150/300 lb. Elev. 80 ft. T.D. 1,300 ft. 5½-in. combination string 1,296 ft. Perf. 1,191-1,296 ft. 1,151 ft. 3-in. tubing. Completed in Vaqueros formation. 6 days' drilling time. Santa Barbara County.

**Oak Canyon Field**

Hathaway Co. 1 Ram ..... 31-5n-17w
Pumped 100 bbl., 23.1-gravity, 35 per cent cut. Elev. 1,369 ft. T.D. 2,594 ft. 8⅝-in. water string 2,410 ft. 205 ft. 6⅝-in. liner 2,594 ft. Perf. 2,410-2,594 ft. 2,580 ft. 2½-in. tubing. Completed in Lechler zone in upper Modelo. 25 days' drilling time. Los Angeles County.

**San Miguelito Field**

Continental 22 Grubb ..... 23-3n-24w
Flowed 2,587 bbl., 30.6-gravity, 2.6 per cent cut, 2,500,000 cu. ft. gas. 16/64-in. and 48/64-in. beans. Pressures 200/600 lb. Elev. 842 ft. T.D. 7,008 ft., P.B. 6,895 ft. 7-in. water string 5,739 ft. 1,190 ft. 4¾-in. liner 6,894 ft. Perf. at intervals 5,740-6,894 ft. 6,770 ft. 2½-in. tubing. Bottomed in gray sand and plugged to base of oil sand. Completed in Grubb zone. 54 days' drilling time. Ventura County.

**Ventura Avenue Field**

Associated 51 V. L. & W. ..... 24-3n-23w
Flowed 1,051 bbl., 29.7-gravity, 2 per cent cut, 675,000 cu. ft. gas. 128/64-in. bean. Pressures 100/600 lb. Elev. 859 ft. T.D. 7,890 ft. 7-in. water string 7,730 ft. 209 ft. 5-in. liner 7,890 ft. Perf. 7,747-7,890 ft. 7,780 ft. 2½-in. tubing. Completed in 57 zone. 77 days drilling time. Ventura County.

### COASTAL DISTRICT WILDCATS

**Castaic District**

Barnsdall 1-17-A Honor rancho ..... 5-4n-16w
T.D. 4,717 ft. in tight oil sand. Excellent gas showings since leaving 2,250 ft. Temporarily suspended drilling. Will drill second test at once. Elev. 1,317 ft. Los Angeles County.

Morse-Mangold 1 McDermott ..... 26-5n-17w
Drilling 2,040 ft. in sandy shale. Elev. 1,470 ft. Los Angeles County.

**Del Valle District**

Fred Jasper 1 Videgain ..... 17-4n-17w
Drilling 638 ft. in sand and shale. Los Angeles County.

R. E. Havenstrite 1 Vasquez ..... 21-4n-17w
T.D. 7,134 ft. in gray sand. Temporarily suspended. First and second Miocene zones tested wet. Located SE of discovery well. Elev. 1,102 ft. Los Angeles County.

Universal Consd. Oil Co. 1 Dennis ..... 21-4n-17w
Rigged up. Questionable whether well will be drilled. Elev. 1,006 ft. Los Angeles County.

**Goleta District**

Texas 3-A Bishop ..... 13-4n-29w
Location staked but material not yet on ground. Santa Barbara County.

Del Mar Oil Co. 1 Goleta ..... 11-4n-28w
T.D. 120 ft. Technical spud. Elev. 160 ft. Santa Barbara County.

**Loma Grande District**

Loma Grande Oil Co. 1 Corey ..... 23-24s-10e
Drilling 3,464 ft. in shale. Elev. 1,500 ft. Monterey County.

**Los Flores District**

Standard 2 Los Flores ..... 27-9n-33w
Graded road and hauling in rig material. Elev. 1,084 ft. Santa Barbara County.

**Newhall District**

Aztec Oil Co. 1 Sanborn ..... 6-3n-16w
Drilling 2,583 ft. in sand. Oil showing on ditch. Elev. 1,516 ft. Los Angeles County.

H. T. Purman 1 Needham ..... 13-3n-16w
Graded road and location. Expect production around 1,550 ft. Elev. 1,681 ft. Los Angeles County.

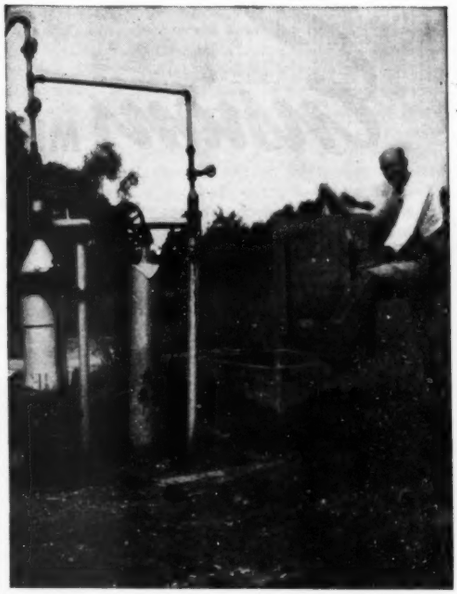
Texas 1 Whitnah ..... 14-3n-16w
Rigging up and preparing to spud. Located on major Pico anticline. Los Angeles County.

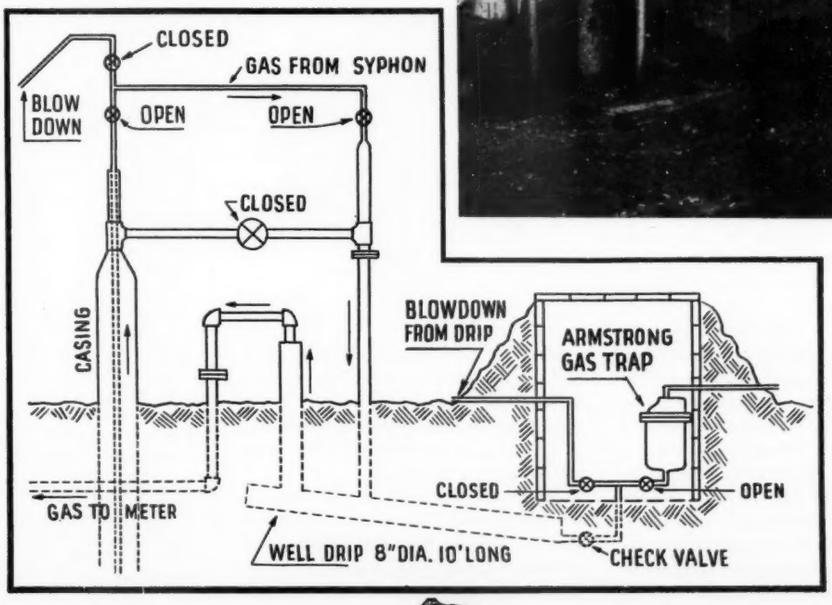
**Oak Canyon District**

Western Gulf 2 Lechler ..... 31-5n-17w
Drilling 5,550 ft. in sand and shale. Running lower structurally than discovery well. Contemplate deep test to lower Modelo. Elev. 1,489 ft. Los Angeles County.


# AUTOMATIC DRAINAGE FOR GAS WELL SEPARATORS

THE accompanying photograph and diagram shows the hook-up used by the Kentucky Natural Gas Co. for draining gas well drips. Formerly, the practice was to take gas from the casing head—water being removed by blowing down the syphon manually once a day. Now, they take gas from the syphon. Water carried over is knocked out by the simple separator. Operation is made completely automatic throughout the year by using an Armstrong Gas Trap to drain the separator. Records indicate that the wells now produce at a higher rate and have a materially longer life. For further information, write ARMSTRONG MACHINE WORKS, 868 Maple St., Three Rivers, Michigan.






ARMSTRONG STEAM TRAPS

*Automatic Drainage for*

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# Good Completions Reported In Turner Valley Outposts

By VICTOR LAURISTON

CHATHAM, Ont., May 5 — Average daily crude production from the Turner Valley field for the week ending April 21 was 26,719 bbl. compared with 26,125 bbl. the previous week. Turner Valley natural-gasoline production declined from 905 to 846 bbl. and production from other fields was down from 145 to 98 bbl., with no deliveries from Steveville. The total average production for the week, 27,663 bbl. compared with 20,788 bbl. for the corresponding week last year.

### Turner Valley Lime Tests

*NORTH TURNER VALLEY.*—Major Oil Investments 1, LSD 5, 34-20-3w5, in hard lime below 7,181 ft. after getting the Madison lime at 6,406 ft. and drilling more than 100 ft. of porous formation in the upper zone.

Home Oil 6, LSD 8, 28-20-3w5, finished at 8,446 ft., 466 ft. in the Madison, is operating on 119 bbl. daily allowable.

Foothills Oil & Gas 8, LSD 12, 27-20-3w5, finished at 8,273 ft., 678 ft. in the lime, flowed 55 bbl. an hour before acidizing, and is acidizing and testing, with expectations of an exceptionally good producer.

*WEST CENTRAL SECTION.*—Anglo-Phillips 2, LSD 9, 35-19-3w5, finished at 7,749 ft., 479 ft. in the lime, is completing tests.

Regal Royalties 1, LSD 14, 24-19-3w5, finished at 8,270 ft., 493 ft. in the lime, flowed 25 bbl. an hour natural, and is acidizing and testing. Independent Royalties 1, LSD 7, has been finished at 8,225 ft., 452 ft. in, with production officially rated at 524 bbl. a day.

Okalta Oil 10, LSD 12, 18-19-2w5, finished at 7,970 ft., 465 ft. in the lime, made 15 bbl. an hour on initial tests, and is acidizing and retesting. Calmont-Northwest 3, LSD 4, finished at 8,060 ft., 448 ft. in the lime, made around 24 bbl. an hour initial, and is completing tests for allowable.

Sun Ray Petroleum Corp. 1, LSD 8, 13-19-3w5, got the Madison limestone at 7,813 ft. and is deepening after cementing production string.

Southwest Petroleum 4, LSD 2, 8-19-2w5, is below 6,618 ft. after getting the lime at 6,499 ft.

*SOUTHWEST SECTION.*—Northwest-Hudson's Bay 5, LSD 10, 8-18-2w5, is below 8,376 ft. after getting the Madison at 8,056 ft., and will be an early completion.

### New Tests Starting

*NORTH TURNER VALLEY.*—Royalite-Model 1, LSD 1, 22-20-3w5, has spudded and is below 178 ft.

Major Oil Investments 4, LSD 8, 8-21-3w5, cellar finished. Major 5, LSD 14, 35-21-4w5, clearing location.

*WEST CENTRAL FIELD.*—Drillers & Producers 3, LSD 3, 7-19-2w5, working on derrick. Drillers & Producers 2, LSD 12, working on derrick. Drillers & Producers 1, LSD 13, rigging.

Calmont-Northwest 4, LSD 2, 18-19-2w5, spudded and below 735 ft.

### Deep Test Resumes

Empress Royalties 1, LSD 5, 2-20-3w5, west of the old Central naphtha field, has resumed from 8,235 ft. and is deepening in the Blairmore below 8,360 ft. Harris Royalties 3, LSD 16, 3-20-3w5, standing at 8,301 ft., in the same formation, is expected to resume. These wells, in a hitherto untested flank area between the West Central and North Turner Valley crude producers, and likely to go 9,000 ft. before the producing horizon is reached.

### Tests in the Foothills

*CLEARWATER.*—Clear Oils 1, LSD 8, 2-35-10w5, is below 1,893 ft. with additional shows of crude below the gas sand at 1,745 ft.; and may make production test.

*MOOSE DOME.*—McColl-Frontenac 1, LSD 9, 6-23-6w5, has been abandoned at 5,200 ft., and is dismantling rig, which will probably be moved a new location.

*PINCHER CREEK.*—Weymarn Petroleums 2, LSD 5, 7-6-1w5, bottoming at 6,430 ft., is clearing hole of jammed cable. Light crude is slowly rising and is around 3,900 ft. in the hole.

The flow, which may prove commercial production, is coming from a horizon above the Madison lime, which was not reached in drilling, but may be derived from the lower formation. In the earlier drilling the formation was mudded off in the effort to reach the lime, and the oil has forced itself through the mud. Efforts are being made to clear the hole and test production. Weymarn 3 has been spotted in LSD 5, 24-6-2w5, north and west of Weymarn 2.

### Border Fields

*BLOOD INDIAN RESERVE.*—Northwest-West Petroleums 1, LSD 3, 20-5-23w4, bottoming in the Devonian limestone at 8,082 ft., is gun perforating and testing production.

*LETHBRIDGE.*—Lethbridge Petroleums 1, LSD 12, 11-8-22w4, is below 3,410 ft. with 6⅝-in. casing at 3,376 ft. Test entered the red beds at 3,394 ft. with the Sunburst sand expected around 3,600 ft. and the Madison at 3,900 ft.

### Eastern Alberta

*STEVEVILLE.*—Standard Oil of British Columbia 3, LSD 5, 13-20-12w4, is recementing. Crude was encountered above the lime at 3,260 ft. with estimated flush production 374 bbl. a day. Standard 4, LSD 13, 12-20-3w5, is coring in below 3,240 ft. Standard 5 Princess, LSD 9, 14-20-12w4, is below 2,671 ft. Standard 6, LSD 15, 12-20-12w4, is rigging. Anaconda-Patricia 1, LSD 9, 31-20-12w4, is rigged, and hauling fuel. Steveville Oils 1, LSD 5, 18-20-11w4, is below 3,356 ft., and getting close to the lime. Princeville 1, LSD 13, 4-20-11w4, has secured drilling permit.

Northwest Co. subsidiary of Imperial Oil, has commenced gravity-meter surveys in the Brooks area south of the Steveville field.

### British Columbia

In the Peace River block, northern British Columbia, Provincial Government 1 at Commotion Creek, bottoming at 5,084 ft., is sidetracking lost bit preparatory to deepening. Producing horizon is looked for around 6,000 ft.

### New Drilling in Ontario

*WINDHAM TOWNSHIP.*—Dominion Natural Gas 2, south half Lot 18, Concession 14, location offsetting producer recently completed in same lot. Dominion Natural Gas, south half Lot 21, Concession 14, starting.

### Ontario Drilling

*WINDHAM TOWNSHIP.* — Dominion Natural Gas Co., N half Lot 23, Concession 13, dry hole in the Clinton formation around 1,200 ft. Dominion Natural Gas, Lot 18, Concession 14, 77,000 cu. ft. in Clinton and deepening.

Dominion Natural Gas 2, south half Lot 18, Concession 14, location offsetting producer recently completed in same lot, Dominion Natural Gas, south half Lot 21, Concession 14, starting.

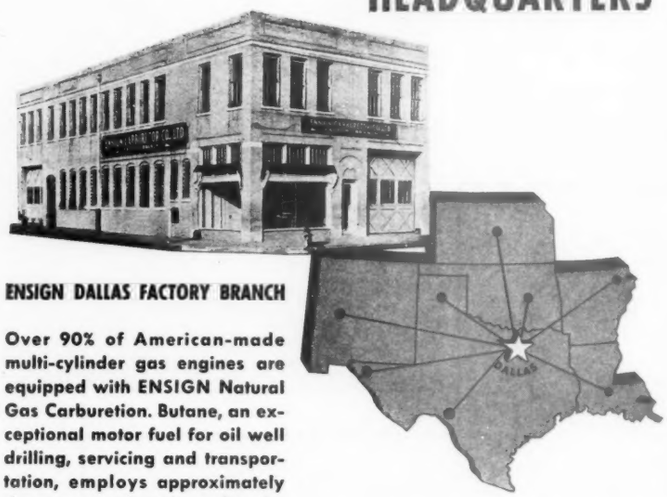
## Cumberland Pool Has 27 Wells

Six rigs were active this week in the Cumberland pool of Marshall and Bryan counties, outstanding Oklahoma discovery for 1940, which is being operated exclusively by the Pure Oil Co. Two other wells had tapped production from the Cromwell sand, found at about 5,050 ft., but had not yet been completed, and one derrick was up for a new location.

Two weeks ago the pool was 1 year old. At that time it had 27 producing wells with a combined potential of 45,000 bbl. a day and had produced some 1,000,000 bbl. in all since its discovery. Only about 1,000 acres of the 22,000-acre block have been proved for production and the field has been virtually defined on the northwest and southeast ends.

Part of the proved acreage would be covered with water if the proposed Denison dam project becomes a reality. The field added Bryan County to the list of oil-producing areas, seat of a leasing campaign which covered about 1,000,000 acres, mostly in Bryan County, and proved a boon to many a peanut and cotton farmer in the area who was in need of cash.


Ensign's MID-CONTINENT HEADQUARTERS

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By
F. L. SINGLETON

# Frio Sand Discovery Converts Cologne Into Oil Field

CORPUS CHRISTI, Tex., May 5.—While continued rains throughout the South Texas area retarded drilling operations in many fields, several interesting developments were recorded for the district. These included a new sand discovery which converted the Cologne gas field, Victoria County, into an oil field, a possible new field for Duval County, and a probable new discovery in San Patricio County.

The Cologne gas field, Victoria County, which was opened in September 1939 by the Houston Oil Co., looms as an important producing area following the completion of the same company's 2 Hornstein, which flowed 98 bbl. of pipe-line oil per day through a ⅛-in. choke. Working pressure was 375 lb. Sand showing oil and gas was cored the previous week at 4,798-4,823 ft., and 5½-in. casing was cemented at 4,846 ft., the total depth, following a drill-stem test which recovered 3,330 ft. of 25-gravity oil. Final completion was made by perforating casing at 4,821-25 ft. The well is located in the Pedro Gallardo Survey, about ½ mile southeast of gas-distillate production which is from the Catahoula formation at approximately 2,860 ft. The new sand, which is tentatively identified as the Frio, showed promise of production in the company's 1 E. C. Dietzel, but the well was later recompleted in a higher sand due to salt-water intrusion.

*SAN ANTONIO BAY.*—Promise of opening a submerged field in San Antonio Bay, offshore from Calhoun County, was not encouraging as Gulfboard 1-177 State recovered salt water on two production tests through perforated casing at 6,320-32 ft. and 6,925-6,302 ft., and the well was being plugged back to test a shallower sand. At the close of the week a cement plug was being set preparatory to perforating and cementing at 2,855-65 ft. and 2,925-35 ft., after which a production test will be made between the perforations. Details as to what the electrical log showed in this shallow sand were not available.

## SUMMARY OF COMPLETIONS

*Lower Gulf Coast District*

| | No. | Bbl. | Footage |
|---|---|---|---|
| Oil wells: Clara Driscoll | 3 | 307 | 16,270 |
| Other fields | 8 | 632 | 36,509 |
| Total | 11 | | 52,779 |

*Laredo District*

| | | | |
|---|---|---|---|
| Oil wells: Colorado | 1 | 133 | 2,940 |
| Other fields | 7 | 799 | 26,305 |
| Dry holes: Fields | 2 | | 4,964 |
| Wildcats | 7 | | 21,648 |
| Total | 17 | | 55,857 |

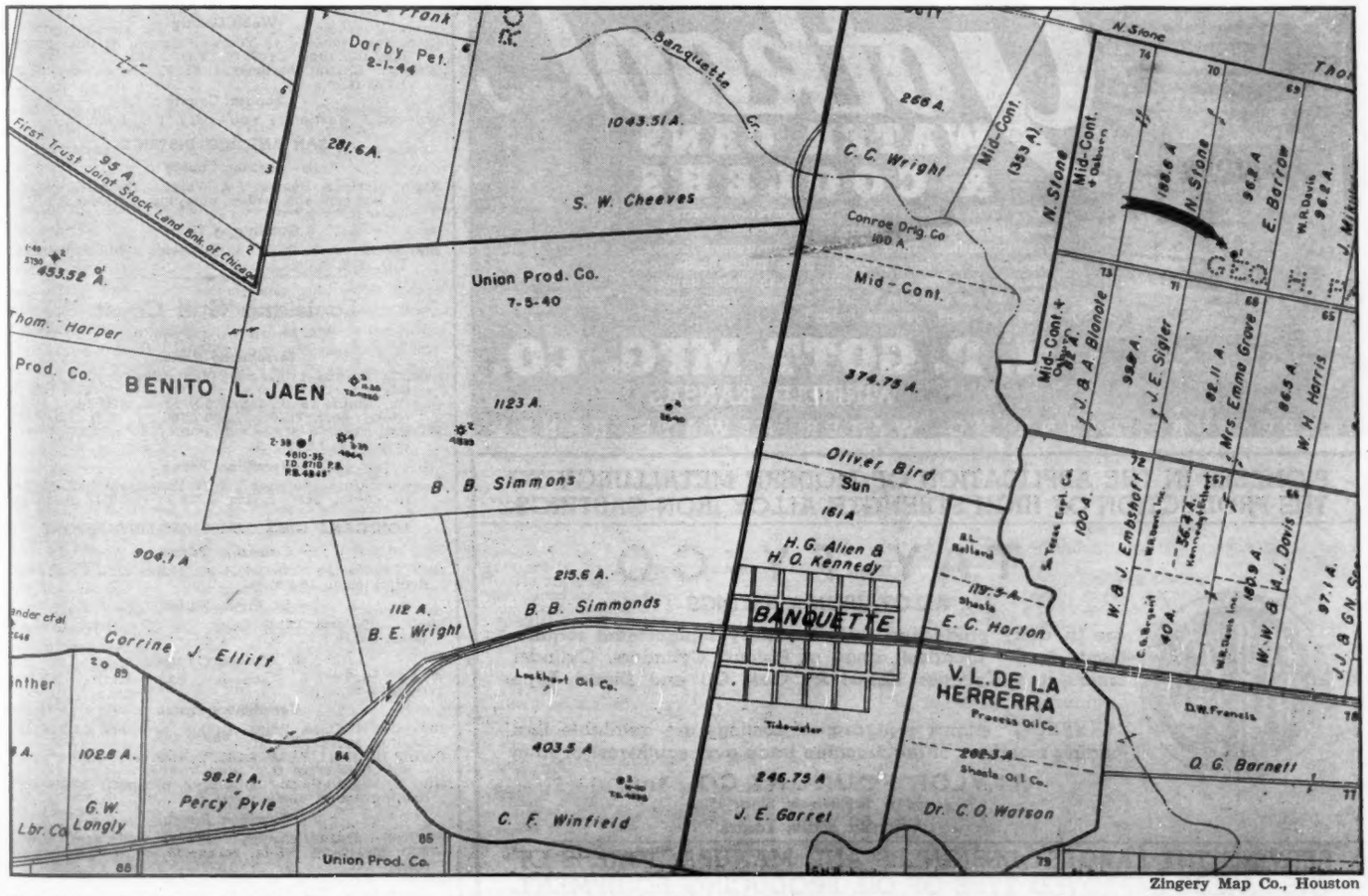
*San Antonio District*

| | | | |
|---|---|---|---|
| Oil wells: Fields | 2 | 107 | 4,165 |
| Total | 2 | | 4,165 |

*WOODSBORO.*—Added importance was given the new Woodsboro field, Refugio County, as the second well drilled on the structure extended production about 3,000 ft. northwest. The extension was made by the completion of Southern Minerals 1 Boenig, which flowed at the rate of 150 bbl. per day through a ⅛-in. choke. Tubing pressure was 1,000 lb. Total depth is 6,710 ft. and production was obtained by perforating casing at 5,880-88 ft. The sand section was encountered higher than the discovery well which was completed at 5,900-03½ ft. The importance of this field is doubtful in view of the discovery well which was completed for an initial production of 55 bbl. of oil and 92 per cent salt water, flowing through a ⅞-in. choke.

*ODEM.*—In San Patricio County, Wellington Oil Co. 1-C Welder, 2 miles west of Angelita, and 1 mile southwest of the discovery well of the Odem field, was being watched with interest as it drills ahead toward a contract depth of 7,500 ft. The well showed for a producer when a drill-stem test at 5,313-30 ft. tested 6 lb. working pressure and recovered 2,400 ft. of salt water and oil, 20 per cent of which was oil. The discovery well of the Odem field was completed in 1939 as a gas-distillate producer from sand at 6,995-7,000 ft.

Another operation in the county which is attracting attention is Tom Graham Oil Co. 1 Otto Blumberg which is in the process of testing after cementing 5½-in. casing on bottom at 5,717 ft. Sands showing oil and gas in sidewall cores were logged at intervals from 5,141-49 ft. The well is located in Section 13, George H. Paul subdivision of the J. J. Welder ranch in the A.B.&M. Survey, about 2,000 ft. northwest of Seaboard 1 Lovett, an oil well which is producing from sand 5,614-18 ft., and about the same distance southwest of Seaboard 1 Person, a gas-distillate producer which is flowing from perforated casing at 5,260-68 ft. This structure was proven productive in 1939,




Zingery Map Co., Houston

*W. B. Osborn and Mid-Continent Petroleum J. E. Barrow (indicated by arrow) which opens new producing area, 2 miles northeast of the Agua Dulce field, Nueces County*

and the present well is the fourth test to be drilled.

Magnolia 1 Seeligson, Unit 4, which opened a new field 1½ miles southwest of Premont, has been officially completed for an initial production of 106 bbl. of 39.8-gravity oil per day through a ⅛-in. choke. Tubing pressure was 700 lb., and shut-in casing pressure 1,720 lb. Production is from the Frio sand at 5,023-40 ft., the total depth. Drilling continues below 3,500 ft. at the company's 1 Seeligson, Unit 3, 1 mile southeast, while 1½ miles east of Premont, J. A. McCartney is moving in material for 1 W. V. Isham et al, located in the center of combined Lots 21, 22, 23 and 24, Section 78 of the Seeligson ranch subdivision.

*SAXET.*—In the Saxet field, Nueces County, Texon Royalty Co. is moving in material for 10 Kocurek, a projected 10,000-ft. test located in Section 316, J. R. Ward Survey. The location is 933 ft. southeast of 2 Kocurek and 933 ft. southwest of 9 Kocurek. Promise of deeper production in the field has been indicated by two deep tests, but due to mechanical trouble caused by excessive gas pressure, no successful test has ever been made.

*AGUA DULCE.*—An extension to the southeast flank development at the Agua Dulce field, Nueces County, was indicated as Taft Oil Co. 1 Hugh Wolters, approximately 1 mile south of production, was reported to be showing for a producer while cleaning out through perforated casing at 6,910-35 ft. The well is in Section 61, Paul subdivision of the Driscoll ranch, south of Ginther & Warren 1 Eggert, the nearest producer.

*STRATTON.*—The northeast flank of the Stratton field, Nueces County, was further defined by the abandonment of Seaboard 1 Kansas City Life Insurance Co. at a depth of 7,224 ft. Slight showings of oil and gas were logged, but drill-stem testing failed to develop commercial production. Location is in Section 196.

*McCAMPBELL.*—Operators interested in the McCampbell field, Aransas and Nueces counties, were watching the results of a scheduled production test of Bay-Tex Oil Co. et al 2 McCulloch, a deep test located on the northeast flank of the field. Total depth of the hole is 10,496 ft., and casing has been cemented preparatory to testing several sand sections logged by an electrical log at intervals from 9,900 to 10,200 ft.

*KREIS.*—A major extension to the Kreis field, or a new producing area flanking the east side of the Loma Nova field, Duval County, was practically assured by the showing of Bridwell Oil Co. et al 1 E. P. Escapule. Sandy shale and shell with a slight odor was cored at 3,198-3,204 ft., sand, shell and lignite at 3,204-05 ft. carried an oil show, and sand showing oil was cored at 3,205-12 ft., the total depth. A 15-minute drill-stem test at 3,198-3,212 ft., through ¼-in. choke on top and a ⅜-in. choke on bottom, tested 22 lb. working pressure and recovered 1,300 ft. of oil and 50 ft. of oily mud. Seven-inch casing was cemented at 3,204 ft. The well is located in the G.H.&H. R.R. Survey No. 75, about 7 miles east of the town of Freer and approximately 3½ miles east of the nearest production. It is also located about 1½ miles northeast of Ike Howeth 1 Kreis, the discovery well of the Kreis field, which was completed as a small producer at 3,246-54 ft.

## SOUTHWEST TEXAS COMPLETIONS

### LOWER GULF COAST DISTRICT

**Jim Wells County**

East Premont: Magnolia 15 Seeligson, 168 bbl., 5/32-in. choke, perf. casing 5,897-99 ft., T.D. 5,900 ft.

**Nueces County**

Clara Driscoll: R. B. Bryant 4 Rogers, 112 bbl., ⅛-in. choke, perf. casing 5,388-95 ft., T.D. 6,075 ft.
Texas 3 Taylor, 88 bbl., ⅛-in. choke, perf. casing 5,470-84 ft., T.D. 5,495 ft.
Texas Conservative 8-A Flynn, 107 bbl., ⅛-in. choke, perf. casing 4,655-61 ft., T.D. 4,700 ft.
Richard King: Southern Minerals 19 King, 97 bbl., 7/64-in. choke, perf. casing 5,636-40 ft., T.D. 5,647 ft.
Southern Mineral 8 Walker, 89 bbl., 7/64-in. choke, perf. casing 5,640-43½ ft., T.D. 5,645 ft.
South Clara Driscoll: Magnolia 7 Driscoll, 50 bbl., 7/64-in. choke, perf. casing 3,829-30 ft., T.D. 3,847 ft.

**Refugio County**

Refugio: Ce-Beth Oil Co. 1-C Shelton, 38 bbl., ⅛-in. choke, perf. casing 5,765-78 ft., T.D. 6,876 ft.

**Victoria County**

Coleto Creek: Averill & Cox, 32 bbl., ¼-in. choke, perf. casing 2,834-52 ft., T.D. 2,854 ft.
North Millican 3 Kastner, 103 bbl., ⅛-in. choke, perf. casing 2,855-60 ft., T.D. 2,890 ft.
Albert Plummer 3-B Terrell, 55 bbl., 3/32-in. choke, top sand 2,828 ft., T.D. 2,850 ft.

## SOUTHWEST TEXAS DRILLING REPORT

**Aransas County**

Humble 1-246 State, Red Fish Bay, T.D. 7,751 ft., 9⅝-in. casing cemented 5,932 ft., waiting on cement.

**Bee County**

Hewitt & Dougherty 1 L. E. Weiss, east of Tuleta, J. M. Uranga grant, drilling shale 7,228 ft.
Lewis Production 1 N. L. McKinney, 2 mi. southeast of Pettus, L. C. Randolph Sur., drilling shale 4,082 ft.

**Jim Hogg County**

F. A. Gillespie 2 Gutierrez, Block 33, S. P. Peebles Sur., dry, T.D. 2,778 ft.

**Victoria County**

W. Stewart Boyle 1 S. E. Ragsdale, 5 mi. south of Telferner, V. Garcia grant, S.D. 4,665 ft.

**Webb County**

J. N. Anderson 1 Benavides, Survey No. 679, 10¾-in. casing 20 ft., drilling plug.
Magnolia 1-A Hamilton ranch, J. Galan grant, drilling shale 5,710 ft.

### LAREDO DISTRICT

**Brooks County**

Kelsey: Magnolia 5 State-Marshall, 336 bbl., ¼-in. choke, perf. casing 4,723-28 ft., T.D. 4,736 ft.

**Duval County**

Benavides: Hiawatha 31 Parr, 47 bbl., ⅛-in. choke, perf. casing 5,724-35 ft., T.D. 5,780 ft.
Muralla: E. R. Thomas 1 Parr, 52 bbl. oil and 10 bbl. salt water, 7/32-in. choke, perf. casing 4,711-12 ft., T.D. 5,025 ft.
Charamousca: Magnolia 9 Duval County Ranch Co., 35 bbl., ⅛-in. choke, perf. casing 1,538-40 ft., T.D. 1,540 ft.

**Hidalgo County**

Nichols: Royal 1 M. P. R. R. Co., 14 bbl., ¼-in. choke, perf. casing 3,491-94 ft., T.D. 5,482 ft.

**Jim Hogg County**

Colorado: Humble 31 Atwood, dry, T.D. 3,159 ft.
Humble 12-B King ranch, 133 bbl., ⅛-in. choke, T.D. 2,940 ft.
Wildcat: Sun 1 Montalvo, dry, T.D. 4,609 ft.

**Live Oak County**

White Creek: Douglas & Holland 1 Bonham, dry, T.D. 1,753 ft.
P. H. Korges 3 Adams, 231 bbl., pumping and flowing, perf. casing 1,516-25 ft., T.D. 1,560 ft.
Wildcat: Kilgore Developers 1 Killmer, dry, T.D. 5,320 ft.

**McMullen County**

Wildcat: Gorman & Yoakum 1 Ferguson, dry, T.D. 3,327 ft.

**Starr County**

Rio Grande City: Sioux 12 Goodrich & Wood, dry, T.D. 1,805 ft.
Wildcat: Fidelity Oil & Royalty Co. 1-B Carruth, dry, T.D. 3,543 ft.

**Webb County**

Glen: Transwestern 12 Yeager-Stroman, 84 bbl., pumping, top sand 2,167 ft., T.D. 2,182 ft.
Wildcat: Durbin & Reed 1 C. H. Lewis, dry, T.D. 1,430 ft.

**Zapata County**

Wildcat: J. Martinez 1 Volpe, dry, T.D. 1,666 ft.

### SAN ANTONIO DISTRICT

**Bastrop County**

Elgin: Marts & Beaven 1-A Walker, 104 bbl., oil and 20 per cent salt water, pumping, 2,830-50 ft., T.D. 3,350 ft.

**Guadalupe County**

Elm Creek: J. E. West 4 Hartfield, 3 bbl., pumping, T.D. 815 ft.

## Louisiana Gulf Coast

*(Continued from Page 96)*

**Terrebonne Parish**

Sinclair Prairie 1 Aragon Plantation, dry, T.D. 11,632 ft.
Bay St. Elaine field: Texas 6-B State, 129 bbl., ⅛-in. choke, perf. casing 7,590-7,700 ft., T.D. 8,012 ft.
Wildcat: Texas 5 State-Coon Point, top salt 11,010 ft., dry, T.D. 11,081 ft.

**Vermilion Parish**

Gueydan: Union Sulphur 1 J. B. Baker, 125 bbl., 10/64-in. choke, perf. casing 9,738-48 ft., T.D. 9,845 ft.

### LOUISIANA GULF COAST DRILLING REPORT

**Calcasieu Parish**

Gulf 1 Calcasieu National Bank, Hayes area, 18-11s-5w, drilling shale 10,200 ft.

**St. James Parish**

Shell 2 Federal Land Bank, La Pice field, drilling sandy shale 8,225 ft.

**St. Tammany Parish**

W. T. Burton 6 State-Lake Ponchartrain, drilling shale 8,707 ft.

**Terrebonne Parish**

Barnsdall 1 State, Point Au Fer prospect, 11-21s-11e, drilling shale 7,500 ft.
Bering Oil Co. 1 W. A. Land, Schriever prospect, drilling shale 8,715 ft.
Gulf 1 M. E. Picou, Lapyrouse prospect, 70-20s-18e, drilling sandy shale 9,105 ft.

**Vermilion Parish**

Phillips 1 Dugas, east of discovery well, Erath field, T.D. 11,740 ft., 5½-in. casing 11,540 ft., prepare to test.
Texas 1 Broussard, ½ mile south of discovery well, Erath field, T.D. 11,624 ft., perf. casing 11,596-11,600 ft., made squeeze job, prepare to test.

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# Deep Gas Tests in Eastern Fields Reach Onondaga

By STAFF CORRESPONDENT

PITTSBURGH, Pa., May 5.—Several of the important deep tests in the lower eastern fields have reached the Onondaga lime and will be closely watched to completion. During the past week, 18 operations were reported of which 5 were dry and 13 gas wells. Two wells were drilled deeper, one being dry and the other a 6-bbl. oil well.

## SOUTHWEST PENNSYLVANIA

On Laurel Ridge in Stewart Township, Fayette County, New Penn Development Co., William E. Snee, and E. G. Mueller apparently topped the chert in the Onondaga lime in the wildcat on the Gregg L. Neel farm. After recoverng all of the dump rod of the bailer and drilling ahead, the chert was struck at 8,053 ft. After restringing the line, the depth was revised upward to the present figure. It has not been decided, yet, whether casing will be run at this depth. The hole has only 600 ft. of surface casing in it now.

On Chestnut Ridge in North Union Township, Fayette County, Wasson & Co. et al are drilling in the Onondaga chert in 2 J. H. Sorg and have gas shows at 7,104 ft. and 7,126 ft. At 7,143 ft., there was a fair gas pay and the well is drilling at 7,154 ft.

In South Union Township, Fayette County, Peoples Natural Gas Co. has started drilling 5 Piedmont Coal Co. and are still cementing in 4 Piedmont Coal Co. between 4,000 and 5,000 ft., trying to straighten the hole. Here New Penn Development Co. et al recovered the tools stuck in the Onondaga chert in 1 Summit Hotel (Heyn) and have turned the gas in the lines. In Maryland these operators are still cementing and straightening the hole at about 4,500 ft. in the wildcat on the Humberson farm on the Accident dome in Garret County.

In Beaver County L. D. McMichaels et al topped the Onondaga at 5,282 ft. in the test on the Elmer Pflug farm on Big Knob in New Sewickley Township. With a surface elevation of 1,153 ft., this places that member at 4,129 ft. subsea. As the measurement was taken with the cable it is possible that the top of the lime may be somewhat higher as has been found by experience. An attempt was made to run a steel line but due to the use of a tannery compound used to keep the wells from caving while drilling through the Marcellus shales, it was found impossible to run the line. A considerable number of gas pockets and blowouts were encountered drilling through the Marcellus which at times kinked the line but the tools were not lost in this section. It is drilling at 5,313 ft.

**Armstrong County**

Kiskiminitas Township: Peoples 1 R. O. Hunter, 76,000 cu. ft. gas, Bradford sand, T.D. 3,575 ft.
Kittanning Township: Equitable 1 George Rohrer, 36,000 cu. ft. gas, Bradford sand, T.D. 3,410 ft.

**Butler County**

Clinton Township: Heck & Gallagher 1 Thomas Brewer heirs, small gas showing, no oil, third sand 1,747-68 ft., T.D. 1,800 ft.

**Fayette County**

Nicholson Township: C. V. Emmers et al 1 Joseph Vaslaviski, 1,591,000 cu. ft. gas, Big Injun 1,285 ft., gas 1,382 ft., T.D. 1,463 ft.

**Greene County**

Center Township: J. C. Devine et al 1 Hugh Smith, dry, through Elizabeth sand, T.D. 3,542 ft.
Monongahela Township: Equitable 1 William Hart, 163,000 cu. ft. gas, Elizabeth sand 2,767-78 ft., gas 2,771-75 ft., T.D. 2,790 ft.

**Washington County**

Amwell Township: Bungard et al 1 Lucille Frazee, 300,000 cu. ft. gas, Little Dunkard sand 1,217 ft., gas 1,223-40 ft., T.D. 1,242 ft.
Hanover Township: D. D. Caldwell & Co. 3 Evaline Caldwell, 28,000 cu. ft. gas, T.D. 1,833 ft.
Morris Township: Carnegie 2 Nelan heirs, 73,000 cu. ft. gas, Gordon sand 2,861-2,928 ft., gas 2,911 ft., Fourth sand 2,943-78 ft., gas 2,944 ft., T.D. 3,043 ft.
Mount Pleasant Township: McGuigan Oil & Gas Co. 1 H. S. Buchanan, 25,000 cu. ft. gas, T.D. 850 ft.
West Bethlehem Township: Victor Behm et al 1 J. S. Smith, drilled deeper, dry, T.D. 2,900 ft.

**Westmoreland County**

Upper Burrell Township: Peoples 1 W. H. Wylie, 48,000 cu. ft. gas, Bradford sand, T.D. 4,207 ft.

### SUMMARY OF COMPLETIONS

*Southwest Pennsylvania*

| | No. | Bbl. | Footage |
|---|---|---|---|
| Gas wells | 9 | *2.3 | 22,413 |
| Dry holes | 2 | ..... | 5,342 |
| Total | 11 | ..... | 27,755 |

*West Virginia*

| | | | |
|---|---|---|---|
| Gas wells: Oriskany | 1 | *1.2 | 5,223 |
| Others | 3 | *0.4 | 6,451 |
| Dry holes | 3 | ..... | 5,887 |
| Total | 7 | ..... | 17,561 |
| Recompletions | 1 | 6 | ..... |

*Million cu. ft.

### DRILLING

**Armstrong County**

Boggs Township: J. K. Sharp et al 1 James Sefton, 565 ft.
Burrell Township: T. W. Phillips 3 S. Wagley, 175 ft.
Cowanshannock Township: Peoples 1 John P. Hoover, 2,264 ft.
William McCollins et al 1 A. L. McCullough, 1,550 ft.
Equitable 2 William Carroll, 2,304 ft.
Equitable 3 William Carroll, rigging up.
Kiskiminitas Township: C. W. Beecher 1 Henry Burdette, building rig.
Manor Township: Local Co. 1 Claude Wray, rig on location.
Plum Creek Township: Peoples 1 Quinter Boyer, drilling at 2,934 ft. with 45,000 cu. ft. gas showing in Speechley sand.
Peoples 1 James Heasley, rigging up.
James Wright 1 Thomas St. Clair, 105 ft.
T. W. Phillips 2 J. P. Dunmire, building rig.
Red Bank Township: Local Co. 1 S. Hunselman, 2,500 ft.
South Bend Township: Equitable 2 Margaret Claypool, 2,880 ft.
South Buffalo Township: T. W. Phillips 1 Lee John, rigging up.
Valley Township: Humphrey, Stone & McCall 1 G. M. Slease, 750 ft.
Wayne Township: R. C. Galbraith et al 1 A. Rupp, 260 ft.
John Wray et al 1 Ira Foster, 1,166 ft.

**Clarion County**

Limestone Township: Owens-Illinois Glass Co. 2 Clark Steele, rigging up.
Piney Township: Frank Shreffler 1 L. E. Gourley, 1,475 ft.

**Fayette County**

Menallen Township: George L. Yaste 1 Atlas Coal Co., rigging up.
Boyd O. & G. Co. 1 Homer D. Smith, rigged up.
Bickerton et al 1 Smith, 913 ft. in Big Injun sand.
Nicholson Township: Wahler-Powers 1 Melvin Woodrich, spudding.
Duquesne 1 Vincent Ryeczek, spudding.
Greensboro 1 Louisa Lowe estate, rigging up.
Springhill Township: Marker Stephenson 1 J. Brojkovitch, 577 ft.

**Greene County**

Center Township: Manufacturers 1 E. W. Wood, 780 ft.
Cumberland Township: Equitable 1 Nellie B. Gideon, 892 ft.
Equitable 1 C. Y. Hathaway, rig standing.
Greene Township: Equitable 1 T. J. Stosnider, location, elev. 1,053 ft.
Jackson Township: H. E. Milliken et al 1 Clyde McCullough, location.
Peoples 1 H. Ullom, 125 ft.
Peoples 1 Roy L. Wise, 2,942 ft.
Equitable 1 Clara Roberts, Fourth sand 3,241 ft., gas 3,285 ft., gage 63,000 cu. ft., drilling 3,305 ft.
Manufacturers 1 Charles Lemons, 165 ft.
Monongahela Township: Equitable 1 Rebecca E. Hart, location, elev. 962 ft.
John Conklin 1 F. L. Mestrzar, 1,160 ft.
Judson Bell et al 3 E. R. Gabler, 80 ft.
Morris Township: Romney Rutan et al 1 Albert Rutan, Nineveh thirty-foot sand 3,229-84 ft., gas gaging 171,000 cu. ft. 3,268-71 ft., oil 3,271-75 ft., hole filled up 500 ft. in 20 hr.
Perry Township: Equitable 1 C. D. Wade, 1,270 ft.
Equitable 1 W. L. Vandruff, building rig, elev. 1,453 ft.
Richhill Township: Charles Hart et al 1 Ross Galloway, 1,420 ft.
Springhill Township: H. E. Milliken et al 1 John Minor, 3,220 ft.
Wayne Township: Lee Wise et al 1 Henry Hizenbaugh, 1,900 ft.
Whiteley Township: H. D. Freeland et al 1 Morris B. Fox, 834 ft.

**Indiana County**

Armstrong Township: T. W. Phillips 1 Mrs. J. R. Craig, 312 ft.
Brush Valley Township: T. W. Phillips 1 Overdorff, 2,428 ft.
Center Township: T. W. Phillips 3 Helvetia Coal Co., 2,346 ft.
South Mahoning Township: Equitable 1 S. H. Heberling, location, elev. 1,464 ft.
Washington Township: T. W. Phillips 2 J. L. Jones, 2,280 ft.
White Township: T. W. Phillips 2 Martha B. Campbell, 1,389 ft.

**Jefferson County**

Beaver Township: T. W. Phillips 1 Fay Plyler, 2,310 ft.

**Washington County**

Deemston Boro: Wherry et al 1 J. P. Phillips, rigging up.
Keystone 1 Ula Keys, 1,740 ft.
Fallowfield Township: Equitable 1 P. B. Irwin, 1,060 ft.
Morris Township: Union Gasoline & Oil Co. 5 W. E. Craft, 660 ft.
Union G. & O. Co. 1 W. D. Craft, location.
West Bethlehem Township: Equitable 1 W. H. Watson, location.
West Finley Township: Lucille Ackley et al 1 Lelia Ackley, 1,650 ft.

**Westmoreland County**

Bell Township: Peoples 1 John W. McCullough, rigging up.
Dome Gas Co. 2 D. S. Carnahan, 400 ft.
Washington Township: Peoples 1 John W. Elwood, 3,184 ft.
Peoples 1 Asa Blose, 2,350 ft.

## WEST VIRGINIA

In Jackson County the wildcat of the United Carbon Co. on the D. F. Hyre farm in Ravenswood district topped the Corniferous lime at 5,003 ft., cased at 5,022 ft., and resumed drilling. This is an interesting test and is located 1½ miles Lat. 38° 50′ and 3.7 miles W. Long. 81° 35′. It is close to the Spencer-Ripley Highway.

In Tygart district, Wood County, the United Carbon Co. is deepening a former Oriskany sand test on the C. W. Cook farm to the Clinton sand. In this test the Oriskany was dry and topped at 4,585 ft. It is now drilling at 5,961 ft. in gray shale and the Clinton is expected in the next 250 ft. There was no Newburg horizon visible and some sand existed at 5,705-60 ft.

**Boone County**

Scott district: Owens, Libby-Owens 34 Cassingham Coal Land Co., 169,000 cu. ft. gas, Big lime 1,813-2,042 ft., Big Injun 2,042-74 ft., Berea 2,516-43 ft., gas 2,519-25 ft., shot 2,515-44 ft., T.D. 2,576 ft.

**Braxton County**

Salt Lick district: A. D. Prunty 1 O. C. and W. H. Hutchinson, dry, a small volume only of 10,000 cu. ft. gas, Gordon sand 2,122-40 ft., T.D. 2,160 ft.

**Ritchie County**

Murphy district: Loris Swadley 1 W. F. Snodgrass, 100,000 cu. ft. gas in Injun sand, through Squaw sand, T.D. 1,780 ft.
Creed Barker et al 1 Burley W. Barker, dry, small gas showing and 4 gal. oil in 52 hr., T.D. 1,846 ft.
Union district: L. E. and W. H. Mossor 1 N. D. Wright, 158,000 cu. ft. gas, Injun sand, T.D. 2,175 ft.

**Roane County**

Harper district: Big Spring Branch Oil & Gas Co. 2 F. W. Westfall, former gas well deepened, 7 bbl., Salt sand, T.D. 1,606 ft.
Boggess Drilling Co. 2 G. W. Raines, dry, Salt sand 1,748-1,881 ft., T.D. 1,881 ft.

### ORISKANY GAS FIELDS

**Kanawha County**

Poca district: Columbian Carbon Co. 1 G. W. Good, 1,220,000 cu. ft. gas, Corniferous lime 5,034 ft., Oriskany 5,158 ft., T.D. 5,223 ft.
United Fuel 4994 A. W. Price, 353,000 cu. ft. gas natural, Corniferous lime 5,012 ft., Oriskany 5,148 ft., depth 5,170 ft., drilling.

### NEW WORK

**Braxton County**

Birch district: Pittsburgh & W. Va. 7835 Genevieve Parr, elev. 890 ft.
Otter district: Pittsburgh & W. Va. 7801 O. J. Bourn, elev. 852 ft.
Pittsburgh & W. Va. 7798 Lewis Dunn, elev. 1,101 ft.
L. E. and W. H. Mossor 1 W. J. Perrine, elev. 1,153 ft.

**Cabell County**

Grant district: Monickle Gas Co. 1 John Heller, elev. 748.16 ft.

**Calhoun County**

Sherman district: McCall Drilling Co. 1 Grover C. Kelly, elev. 1,096 ft.
Washington district: Victor Brannon and A. E. Weaver 1 T. P. McCune, elev. 950 ft.

**Clay County**

Buffalo district: Pittsburgh & W. Va. Gas Co. 7812 Elk River Coal & Lumber Co., elev. 1,382 ft.
Pittsburgh & W. Va. Gas Co. 7813 Elk River Coal & Lumber Co., elev. 1,157 ft.
Pleasants district: Thompson Gas Co. 1 Thompson Land & Coal Co., elev. 1,389.9 ft.

**Gilmer County**

Center district: Pittsburgh & W. Va. Gas Co. 7802 John Burk, elev. 934 ft.
Pittsburgh & W. Va. 7803 Flossie Snodgrass, elev. 1,088 ft.
Center and DeKalb districts: Carnegie 2 Coleman Peters, elev. 814 ft.
Glenville district: Pittsburgh & W. Va. 7804 S. A. Hays, elev. 892 ft.

*(Continued on Page 112)*

# Test South of Schuler May Show Secondary Structure

By
GEORGE WEBER

SHREVEPORT, La., May 5.—Wildcat tests now drilling in North Louisiana, East Texas Border and South Arkansas mark a widespread revival in exploration in the tristate activity. Although few tests are currently at critical depth, and no outstanding shows were reported this week, the tests, extending from the Wilcox play of La Salle and neighboring parishes, northward to the Smackover lime trend of South Arkansas, are being closely watched.

## ARKANSAS

In Union County, Crescent Drilling Co. 1 Burns, located 3 miles east of the Schuler field, is drilling below 5,428 ft. in the Cotton Valley formation. Cuttings taken at 3,240-3,310 ft. and 3,600-3,620 ft. showed oil stain. This show of oil at shallow depths is taken to indicate saturation in the deep Smackover lime, since some successful Smackover wildcats had shallow shows. The relation has not always held, however.

It is believed by some that the Schuler structure may show a minor uplift to the southeast of present production. The field itself shows a local high on the Jones sand in the southeast, and production may be present to the south and east of the present field limits, separated from Schuler by a shallow saddle. This is entirely conjectural until proven or disproven by drilling, so the Crescent test is of much interest to Union County.

In the El Dorado field of Union County, C. H. Murphy is still producing a small amount of oil and much salt water in 1-C Cates. The deep test is bottomed at 7,820 ft. in the Smackover lime but production is coming from a section perforated at 5,504-08 ft. The test made condensate and some gas several days ago, but salt water broke in and now accounts for about 98 per cent of the flow.

Another deep show in the Stephens field of Columbia and Ouachita counties is still of interest. There Crow Drilling Co. first encountered small oil production in what is termed the Smart sand at 3,417-25 ft. After flowing about 10 bbl. of 31-gravity oil and 5 bbl. of wash water, the well went dead and is shut down.

A second well was drilled by Fitzwater & McClerkin, which found the Smart sand at 3,425 ft. and was bailing last week, making about 3 bbl. hourly of oil and some wash water, with 3,300 ft. of fluid in the hole.

Two other wildcats in South Arkansas are drilling for the Smackover lime in Columbia County, but are not yet at critical depths.

### ARKANSAS COMPLETIONS

**Urbana—Union County**

R. T. Adams 1 P. Winn est.....NW SE SE 10-18-13
T.D. 3,605 ft., dry.

**WILDCATS**

**Clark County**

Coker, Christman & Grieves 1 Williams .....
NE NE NE 7-11-20
Drilling 1,555 ft.

**Columbia County**

Fitswater & McClerkin 1 C. C. Smart .....
NE NE NE 14-15-20
(Deep Stephens test), T.D. 3,434 ft., bailing oil and wash water.
McAlester Fuel Co. 1 Franks .....SE SE 16-18-21
Drilling lime and shale 4,800 ft.
Phillips Pet. Co. 1 R. S. Warnock, Jr...SW NW 1-17-20
Drilling shale 6,015 ft.

**Faulkner County**

Cato Oil Co. 1 R. R. Harrell.....SE SW 35-4n-12w
S.D. 3,625 ft.

**Jefferson County**

Patterson & Stratton 1 F. and D. Stratton
SE NW NE 35-6s-9w
Rigging up.

**Lonoke County**

A. V. Riley 1 J. T. Gunter.....SE SE 17-5n-10w
S.D. 2,825 ft.

**Ouachita County**

Jack Carnes 1-B Rath & Cartier, Inc...N½ NE 2-14-18
S.D. 1,861 ft.

**Prairie County**

Alvin E. Stark 1 Fidelity Mutual..NE NE SW 16-2n-6w
S.D. 990 ft.

## SUMMARY OF COMPLETIONS

*North Louisiana*

| | No. | Bbl. | Footage |
|---|---|---|---|
| Oil wells: Sligo | 1 | 127 | 3,120 |
| Caddo | 4 | 90 | 5,479 |
| Little Creek | 1 | 85 | 3,078 |
| Nebo | 1 | 239 | 3,751 |
| Olla | 2 | 175 | 4,812 |
| Gas wells: Lisbon | 1 | *36 | 5,473 |
| Monroe | 1 | †2 | 2,182 |
| Dry holes: Zwolle | 1 | ..... | 2,197 |
| Wildcats | 1 | ..... | 4,041 |
| Total | 13 | 752 | 34,133 |
| *Arkansas* | | | |
| Dry holes: Urbana | 1 | ..... | 3,605 |
| *East Texas Border* | | | |
| Gas wells: Waskom | 1 | †33.5 | 6,194 |
| Dry holes: Wildcats | 1 | ..... | 3,226 |
| Total | 2 | ..... | 9,420 |

*Condensate, and 5 million cu. ft. gas.
†Million cu. ft.

## NORTH LOUISIANA

The only development of interest from the Wilcox play centering in La Salle Parish, was abandonment of Placid Oil Co. 3-A Tremont, a wildcat located 3 miles northwest of the Little Creek field. Little Creek was extended to the southeast by completion of the Placid 2-B Goodpine, and activity continues at Little Creek, Summerville, Olla and Nebo. The wildcats drilling in the area at this time are not yet at interesting depths.

Four deep wildcats drilling in northeast Louisiana are directing attention to that sector. Two in Lincoln Parish are drilling below the top of the Cotton Valley. On the southeast flank of the Lisbon structure, Big West Drilling Co. 1 Patton estate is below 8,050 ft., 43 ft. in the Cotton Valley formation where progress will be watched with interest. To the south on the Simsboro structure, Herman Brown is drilling below 9,917 ft. in 1 Arkansas Louisiana Gas, which topped the Cotton Valley at 8,650 ft. Neither test has reported shows.

Union Producing Co. is drilling 1 White, Morehouse Parish, on the east flank of the Monroe uplift, and Louark Producing Co. 1 Farley is drilling on the upthrow side of the Monroe fault, west of the Monroe field in Union Parish.

In western Caddo Parish, the Delta Drilling Co. 2 Thigpen Herold, a northeast edge test in the shallow gas field, failed to find either oil or gas sand and is being abandoned. The operator's 1 Thigpen Herold encountered oil sand below the first gas horizon but has not yet drill-stem tested it. The well is shut in awaiting a gage after perforating in the gas sand.

### NORTH LOUISIANA COMPLETIONS

**Sligo—Bossier Parish**

Triangle Drilling Co. 1 Smith et al..NE SE NE 14-17-12
Pumped 127 bbl., T.D. 3,120 ft., 5½-in. casing 3,102 ft., 2,500 gal. acid.

**Caddo—Caddo Parish**

C. C. Crews 10 Stiles.....SE NE SW 33-21-16
Pumped 15 bbl., T.D. 1,862 ft., 5½-in. casing 1,849 ft.
A. R. Hancock 10 Helpman.....SE SW NE 16-21-16
Pumped 25 bbl., T.D. 1,033 ft., 6⅝-in. casing 1,027 ft.
Guy N. Kinney 4 Crystal fee.....NW SE SE 24-21-16
Pumped 25 bbl., T.D. 1,014 ft., 6⅝-in. casing 1,007 ft.
Weaver Perry Oil Co. 6 Pardue..NE SW NW 33-21-15
Pumped 25 bbl., T.D. 1,570 ft., 7-in. casing 1,378 ft., 4,000 gal. acid.

**Lisbon—Claiborne Parish**

Oakes et al 2 Sallie Lloyd.....SE SE 3-20-5
Old well drilled deeper, old T.D. 5,473 ft., recompleted 5,000,000 cu. ft. gas, 35 bbl. 71-gravity condensate, 19/64-in. choke, T.P. 1,050 lb., C.P. 1,300 lb., set short string 4-in. casing 5,473 ft., perf. 5,420-30 ft., Travis Peak.

**Little Creek—La Salle Parish**

Placid Oil Co. 2-B Goodpine.....NW SE 32-9-2e
106 bbl., 20 per cent salt water, T.D. 3,078 ft., 7-in. casing 3,027 ft., perf. 2,500-04 ft., Wilcox sand.

**Nebo—La Salle Parish**

H. L. Hunt 19-A Goodpine.....SW NW 16-7-3e
285 bbl., 14/64-in. choke, 16 per cent salt water, T.P. 500 lb., C.P. 1,150 lb., T.D. 3,751 ft., 7-in. casing 3,748 ft., 3,680-86 ft., Wilcox sand.

**Olla—La Salle Parish**

Ark. Fuel Oil Co. 2-E Kees.....SE NE 7-10-3e
Pumped 60 bbl., 5 per cent salt water, T.D. 2,373 ft., 7-in. casing 2,371 ft., perf. 2,178-88 ft., upper Central sand.
Placid Oil Co. 85 La. Central.....NW NW 2-9-2
140 bbl., flow valves 24/64-in. choke, 16 per cent salt water, T.D. 2,439 ft., 7-in. casing 2,438 ft., perf. 2,090-98 ft.

**Wildcat—La Salle Parish**

Placid Oil Co. 3-A Tremont.....SW NW 18-9-2e
T.D. 4,041 ft., dry.

**Zwolle—Sabine Parish**

Ed Bailey 1 Hale .....NE NW 6-7-12
T.D. 2,197 ft., dry.

**Monroe—Union Parish**

T. I. P. Corp. 1 Jordan .....N½ SE SW 11-21-3e
2,000,000 cu. ft. gas, R.P. 915 lb., T.D. 2,182 ft., 6-in. casing 2,131 ft.

**NEW WILDCATS**

**Grant Parish**

Bert Fields et al 1 McManus.....SE NE 8-8n-4w
Location.

**La Salle Parish**

Milton J. Houston et al 1 Gross.....19-8n-3e
S.D. 1,637 ft.

**WILDCATS**

**Catahoula Parish**

Louark Prod. Co. and Phillips Pet. Co. 1-B Tensas Delta Land Co.....SE NW 15-5n-5e
Moving in rig.

**Claiborne Parish**

Harold A. Wright 1 Rainach.....SW NE 16-22-5
Drilling shale 4,327 ft.

**De Soto Parish**

G. H. Neighbors 1 Bufkin.....NE SE NW 11-10-11
Rigging up.
J. E. Stack et al 1 Cook.....NW NE 32-13-14
Set 7-in. casing 2,890 ft.

**La Salle Parish**

Delta Drilling Co. 1 Hughes....NE NE SW 22-8-1e
T.D. 4,092 ft., set 5½-in. casing 1,509 ft., waiting on cement.
M. L. Meredith 1 Grey .....NE NE 36-8-2e
S.D. 50 ft.
H. R. Scivally, Tr., 1 Tensas Delta..SW NE 12-6n-4e
Rigging up.

**Lincoln Parish**

Big West Drlg. Co. 1 Patton est...E½ W½ SE 7-20-4w
Drilling shale 8,051 ft.
Herman Brown 1 Ark. La. Gas Co.....SW NE 11-17-4
Drilling hard sand 9,917 ft.

**Morehouse Parish**

Union Prod. Co. 1 E. M. White.....37-20-6e
Drilling shale 2,332 ft.

**Sabine Parish**

K. E. Merren 1 Nona Mills Lbr. Co.....
SW SW NE 28-3n-12w
Rigging up.
J. E. Watts 1 Cook Land Co.....W½ SW NE 27-10-11
T.D. 3,475 ft., awaiting orders.

**Union Parish**

Louark Prod. Co. 1 H. H. Farley et al .....
NE SW 10-20n-1w
Drilling shale 2,955 ft.

**Winn Parish**

Nat Wissman 1 Quinn .....38-9-6w
S.D. 2,537 ft.

### EAST TEXAS BORDER COMPLETIONS

**Waskom—Harrison County**

Arkansas Louisiana Gas Co. 1 W. G. Howell, Simpson Holloway Sur., 33,500,000 cu. ft. gas, open flow, T.D. 6,194 ft., perf. 5,888-6,194 ft., R.P. 1,940 lb.

**Wildcat—Shelby County**

Coupar Oil Co. 1 Mary and H. H. Jones, John Latham Sur., T.D. 3,226 ft., dry.

**WILDCATS**

**Bowie County**

Normandie Oil Co. 1 E. Powell, John S. Herring Sur., drilling shale 3,857 ft.

**Cass County**

British American Oil Prod. Co. 1 East Texas Iron Assn., L. Moren Sur., T.D. 4,034 ft., S.D., no shows reported.

*(Continued on Page 112)*

# Recycling Plant and Drilling Planned For Willow Springs

By R. MARNE SANFORD

DALLAS, Tex., May. 5.—The Willow Springs condensate-producing field in Gregg County was reported being considered for a recycling plant and increased field drilling, under a plan now pending with Roger Lacy, main operator in the field, and the Lone Star Gas Co., Dallas.

Negotiations are under way whereby Lone Star Gas Co. will acquire half interest in the Roger Lacy properties for a reported consideration of $200,000 cash. Together with the actual purchase is the construction of a pipe-line outlet planned for the field by Lone Star to connect with its system at Opelika in Henderson County. At Opelika Lone Star Gas, together with Shamrock Oil & Gas Co., operate jointly a recycling system for that field. Gas from the Willow Springs field would enter the Lone Star huge commercial distributing pipe-line network at the Opelika point.

Lacy's holdings in the Willow Springs area include two completed gas wells and a third drilling. Also in operation for the past several months is Lacy's commercial gas-distributing system furnishing the towns of Longview, Kilgore, Willow Springs and Gladewater.

Several months ago Lacy announced that he would seek a franchise from the Dallas City Council to enter that city with a gas-distributing system to compete with the Lone Star Gas Co. now supplying the city.

In the field itself, Humble and Gulf, jointly, own two producing wells, while Gulf alone has one drilling and Union Producing Co. has one drilling.

## SUMMARY OF COMPLETIONS

*East Texas Field*

| | No. | Bbl. | Footage |
|---|---|---|---|
| Oil: Longview area | 5 | 290 | 17,927 |
| Kilgore area | 4 | 151 | 14,495 |
| Joiner area | 2 | 64 | 7,197 |
| Total | 11 | | 39,619 |

*East Central Texas*

| | | | |
|---|---|---|---|
| Oil: Hawkins field | 11 | 3,745 | 53,156 |
| Talco field | 2 | 1,260 | 8,600 |
| Other fields | 5 | 1,197 | 23,439 |
| Dry: Wildcats | 2 | | 5,203 |
| Total | 20 | | 90,398 |

## Hawkins Field

Despite the failure to find additional Woodbine sand fields from the widespread exploratory play that developed from the discovery of the Hawkins field, wildcatting is still continuing strong in the vicinity of the Hawkins field. The field itself, the past week, registered its greatest 7-day period of activity since its discovery in December of 1940.

During the immediately past 7-day period there were a total of nine completions in the field, all oil wells, for a total estimated daily initial of 3,745 bbl., the wells having been gaged on various time flows. There were four new locations staked in the Hawkins field which brought the total operations to 19 drilling wells and 5 active locations. For the first time since its discovery the weekly completions figure in the field equaled that of the great East Texas field, still leading the district after more than 10 years.

One mile northeast of Big Sandy in southwestern Upshur County and east of the Hawkins field, L. S. Buchanan of Gladewater is preparing to let drilling contract on a recently announced wildcat on the D. G. Robinson tract, John Sanders Survey. Contract depth will be the Woodbine sand.

Sells Petroleum 1 Day, Wren Survey, 3 miles northeast of Winona in northeastern Smith County and just south of the Hawkins field, was coring the Woodbine section at the close of the week, no saturation yet being reported. Last core from 5,331 to 5,351 ft. recovered sand with no shows of oil or gas.

One-half-mile northeast extension was given the Hawkins field by a completion this week. Humble 1 Ponder, William Herrington Survey, gaged 300 bbl. of oil through ¼-in. choke in 18 hours. Shut-in pressures were 470 lb. on casing and 480 lb. on tubing. The oil was 25.7 gravity.

### EAST TEXAS FIELD COMPLETIONS

(1-hour gages)

**Gregg County**

Longview area: General American 32 Adams, 80 bbl., 3,577-94 ft.
Sinclair Prairie 23 Lawson, 60 bbl., 3,493-3,581 ft.
Tide Water 5 Everett, 48 bbl., 3,478-90 ft.
Tide Water 10 Richey, 60 bbl., 3,515-25 ft.
Kilgore area: George McGee 2 fee, 35 bbl., 3,545-70 ft.
George McGee 3 fee, 30 bbl., 3,536-67 ft.
Shell 95 Watson, 44 bbl., 3,550-3,698 ft.
Shell 97 Watson, 42 bbl., 3,556-3,660 ft.

**Rusk County**

Joiner area: Atlantic 48 Kinney, 26 bbl., 3,539-3,625 ft.
J. R. Gaskey 2 Alford, 16 bbl., 3,560-72 ft.

**Upshur County**

Longview area: Mudge Oil 2 Shelton, 42 bbl., 3,428-3,737 ft.

### EAST CENTRAL TEXAS COMPLETIONS

**Anderson County**

Cayuga: Carter-Gragg Oil 4 McMahon, 203 bbl. daily, ⅛-in. choke, perf. casing 4,002-04 ft., T.D. 4,007 ft.
Long Lake: Tide Water-Seaboard 11 Monnig, 64 bbl. daily, T.D. 5,264 ft.

**Franklin County**

Talco: Magnolia 5 Rutherford, 131 bbl. in 4 hr., 4,238-70 ft.

**Freestone County**

Wortham: J. B. Daniels 1 Vincent, 38 bbl. oil and 38 bbl. water, T.D. 2,978 ft.

**Navarro County**

Wildcat: W. H. Clements 2 Eden, M. Shire Sur., 4 mi. S Corsicana, dry at T.D. 311 ft.

**Rains County**

Wildcat: L. L. Prock 1 Grimes, Sam Yandell Sur., 5 mi. NE Emory, top Woodbine 4,455 ft., dry at 4,892 ft.

**Smith County**

Chapel Hill: Sun Oil 1 Dickerson, 60 bbl. daily, gas lift, T.D. 8,325 ft.

**Titus County**

Talco: Humble 5 Temple, 79 bbl. in 4 hr., pumping, 4,291-4,330 ft.

**Van Zandt County**

Van: P. Calvert 3 Carter, 104 bbl. in 3 hr., 2,841-65 ft.

**Wood County**

Hawkins: Bracken Oil 1 Johnson, 106 bbl. in 6 hr., ¼-in. choke, top Woodbine oil sand 4,491 ft., T.D. 4,850 ft.
Cable Tool Drlg. Co. 1 Akin, 106 bbl. in 6 hr., no sand record, T.D. 4,890 ft.
G. A. De Montrand 1 Cobb, 110 bbl. in 6 hr., top Woodbine 4,368 ft., top oil sand 4,478 ft., T.D. 4,811 ft.
General American Oil 1-B Holmes, 341 bbl. in 18 hr., top Woodbine 4,368 ft., top oil sand 4,608 ft., T.D. 4,830 ft.
Humble 1 Hargett, 18 bbl. per hr., top Woodbine 4,244 ft., oil sand 4,420 ft., T.D. 4,827 ft.
Humble 1 Ponder, 300 bbl. in 18 hr., top Woodbine 4,550 ft., oil sand 4,650 ft., T.D. 4,820 ft.
Humble 1 Shamburger, 258 bbl. in 18 hr., top Woodbine 4,615 ft., oil sand 4,722 ft., T.D. 4,862 ft.
Roger Lacy 1 Crow, 358 bbl. in 18 hr., top Woodbine 4,570 ft., oil sand 4,643 ft., T.D. 4,818 ft.
P. G. Lake 1 Cobb, 109 bbl. in 6 hr., no sand record, T.D. 4,836 ft.
Alex McCutchin, 116 bbl. in 6 hr., top Woodbine 4,345 ft., oil sand 4,529 ft., T.D. 4,822 ft.
B. B. Orr 1 Parrish, 117 bbl. in 6 hr., top Woodbine 4,387 ft., oil sand 4,550 ft., T.D. 4,790 ft.

### EASTERN TEXAS WILDCAT REPORT

**Anderson County**

Griffith Bros. 1 Clayton, William Frost Sur., Elkhart area, S.D.O. 5,513 ft.
R. H. & W. Oil 1 Saunders, 17-acre tract in Joseph Ferguson Sur., in Frankston townsite, top sub-Clarksville 4,874-4,910 ft., S.D. 5,225 ft.
Huddleston & Prater 1 Praff, R. Allen Sur., 5 mi. NW Palestine, S.D. 1,530 ft.
B. T. Royalties 1 Coleman, NW cor. Coleman tract in J. A. Box Sur. 10, 12½-in. at 74 ft., 8-in. at 1,020 ft., preparing to drill deeper.

**Camp County**

Lucey 1 McKenzie, L. William Sur., ¾ mi. W of Pitts-

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burg field, 9⅝-in. at 2,225 ft., top Pecan Gap 2,374 ft., drilling 3,004 ft.

**Falls County**

Kelsey & Miller 1 Reed, A. de la Serda Sur., 3 mi. NE Marlin, top Buda 1,730 ft., drilling 1,812 ft.

**Fannin County**

H. W. English 1 Parkhurst, M. P. Davis Sur., 7 mi. W of Leonard, derrick.
Damon Oil 1 Chaffin, A. C. Ketchum Sur., 4 mi. NE Bonham, S.D. 95 ft.

**Freestone County**

Carter-Gragg 1 Mims, J. M. Lyons Sur., 2½ mi. S Butler, derrick and moving in material.

**Houston County**

G. C. Dixon 1 Texas Long Leaf Lbr. Co., J. Chears Sur., 5 mi. W of Lovelady, S.D. 1,460 ft.

**Lamar County**

Whitehead & Dahl Bros. 1 J. M. Barr, P. Compton Sur., 9 mi. S of Paris, rigging up.

**Limestone County**

Zephyr Oil 8 Peeples, R. Scott Sur., in Tehuacana field, deep Travis Peak test, location.

**Morris County**

C. B. Zuber 1 Blackburn, E. B. Smith Sur., SW cor. of county, top Nacatoch 2,010 ft., Blossom 3,345 ft., Woodbine 4,175 ft., Georgetown 4,330 ft., drilling 5,170 ft.

**Navarro County**

Hargrave Oil 1 C. S. West, M. Boren Sur., 1½ mi. S of Richland, T.D. 3,257 ft., salt water.

**Robertson County**

C. C. Baker & Son 1 Middleton, J. S. McNeil Sur., 2 mi. S of Elliott, S.D. 20 ft.
H. A. Clary 1 A. G. Scott, H. F. Thornton Sur., 2 mi. W of Franklin, derrick.

**Rusk County**

W. W. Barber 1 J. A. McCreary, H. Huejas Sur., 6 mi. SW of Enterprise, top Pecan Gap 2,944 ft., Austin chalk 3,380 ft., Georgetown lime 3,585 ft., S.D. 3,703 ft.
Ross Sears 1 Pool, George May Sur., Laveville area, top Pecan Gap 3,107 ft., drilling 3,238 ft.

**Upshur County**

L. S. White and O. S. Strickland 1 Gorman, S. G. Clayton Sur., 1 mi. SW of Big Sandy, S.D. 1,870 ft.

**Van Zandt County**

Hickok & Reynolds 1 Brown, Leander Smith Sur., 5 mi. SW Canton, location.

**Wood County**

Fred Browning and J. C. Robbins 1 M. N. Andrews, SW cor. J. R. Smith Sur., 9 mi. N of Hawkins, location.


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2 LOCKS INSIDE OF PIPE
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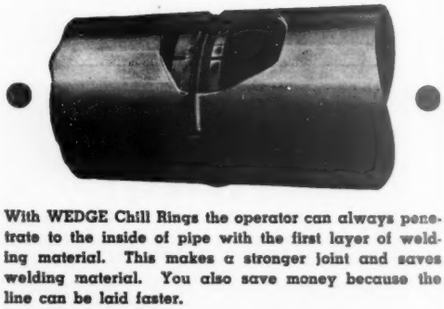

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## North Louisiana, Arkansas

*(Continued from Page 110)*

**Marion County**

A. H. Richardson (former P. L. Withers) 1 T. G. Allen, Robert Potter Sur., S.D. 2,366 ft.

**Sabine County**

Sturm & Womack 1 Keith, L. Grace Sur., fishing, T.D. 6,259 ft.

**San Augustine County**

Roper & Todd 1 Long Bell, N. Hyden Sur., T.D. 3,021 ft., S.D., awaiting orders.

**Union County**

Crescent Drlg. Co. 1 Burns .....NE SW 13-18-17
Drilling 5,428 ft.
C. H. Murphy 1-C Cates.....NW SW 33-18-15
(Deep El Dorado test), T.D. 7,820 ft., flowed 92 bbl. fluid, 98 per cent salt water, ¼-in. choke.

### AVERAGE DAILY PRODUCTION

**NORTH LOUISIANA**

| | Bbl. |
|---|---|
| Bellevue | 625 |
| Caddo, light | 6,180 |
| Caddo, heavy | 2,100 |
| Converse | 565 |
| Cotton Valley | 13,600 |
| Cross Lake | 3,085 |
| De Soto and Red River | 975 |
| Elm Grove | 330 |
| Haynesville | 2,610 |
| Holly | 90 |
| Homer | 2,865 |
| Lisbon | 3,305 |
| Little Creek | 445 |
| Nebo | 1,930 |
| Olla | 10,850 |
| Pleasant Hill | 90 |
| Rodessa | 15,180 |
| Sarepta-Carterville | 235 |
| Sligo | 2,000 |
| South Olla | 100 |
| Sugar Creek | 1,400 |
| Urania | 2,245 |
| Zwolle | 1,270 |
| Total North Louisiana | 72,075 |
| Rodessa, Texas | 14,565 |

**SOUTH ARKANSAS**

| | |
|---|---|
| Atlanta | 2,710 |
| Big Creek | 80 |
| Buckner | 2,540 |
| Champagnolle | 1,075 |
| Dorcheat | 1,810 |
| El Dorado | 1,560 |
| Fouke | 275 |
| Lewisville | 385 |
| Lisbon | 200 |
| Magnolia | 20,000 |
| McKamie | 2,400 |
| Miller County | 240 |
| Nevada | 550 |
| Nick Springs | 1,050 |
| Rodessa | 1,665 |
| Schuler | 16,475 |
| Smackover, light | 1,830 |
| Smackover, heavy | 13,300 |
| Stephens | 500 |
| Troy | 1,00r |
| Urbana | 1,610 |
| Village | 1,095 |
| Total South Arkansas | 72,350 |

**MISSISSIPPI**

| | |
|---|---|
| Tinsley | 27,802 |
| Pickens | 640 |
| Total Mississippi | 28,442 |

## Appalachian Fields

*(Continued from Page 109)*

**Jackson County**

Ravenswood district: United Fuel Gas Co. 5022 F. F. Starcher.
Ripley district: Godfrey L. Cabot 9 J. L. McLean heirs.
United Carbon Co. 7 Elizabeth W. Perkins.
Columbian Carbon Co. 4 Helen M. Hoge, elev. 810 ft.
Columbian Carbon Co. 2 J. W. Wetherholt, elev. 867.4 ft.
Columbian Carbon Co. 4 Putnam Co., elev. 1,065 ft.
United Fuel 5021 J. A. Shinn.
United Fuel 5023 E. L. Harpold.

**Kanawha County**

Poca district: O. D. Hill, Jr., 1 B. E. Fisher, elev. 625 ft.
Columbian Carbon Co. 1 L. D. Wickline, elev. 715.1 ft.
Brawley-Reid O. & G. Co. 1 Rittie Lance.
Rex O. & G. Co. 1 Haynes heirs, elev. 1,025 ft.
Poca Fork O. & G. Co. 1 Siegle Moore, elev. 950 ft.
Godfrey L. Cabot 18 Putnam Co.
Godfrey L. Cabot 1 Edna Asbury.
Godfrey L. Cabot 10 J. L. McLean heirs, elev. 848.07 ft.
Godfrey L. Cabot 4 Poca Coal Land Co.
Elk district: South Penn 1 Lincoln Dodd, elev. 874 ft.
United Fuel 4615 Louisa D. Updegraff, elev. 1,370 ft.
Union district: Godfrey L. Cabot 1 V. F. Older.
Godfrey L. Cabot 1 I. M. Bailey.

**Lewis County**

Hackers Creek district: Hope 2 N. E. Allman, to drill deeper.
Freemans Creek district: Hope 8555 Alfred Woofter, elev. 1,222 ft.

**Lincoln County**

Carroll district: United Fuel 4 A. B. Barrett, drill deeper.
Washington district: United Carbon Co. 3 Lincoln Mineral Co.

**Logan County**

Logan district: South Penn 63 Yawkey-Freeman, elev. 1,607.62 ft.

**Monongalia County**

Clay district: Roy N. Clovis 2 C. E. Moore, elev. 932 ft.

**Taylor County**

Booths Creek district: Hope 8534 A. Y. McElroy, elev. 1,113 ft.

**Wetzel County**

Grant district: Carnegie 5 Michael Barr, elev. 1,245 ft.
Carnegie 1 T. J. Glover, elev. 1,464 ft.

**Wirt County**

Clay district: G. L. Shimer 2 O. C. Beckner, elev. 762.5 ft.

## Oklahoma Fields

*(Continued from Page 92)*

log, T.D. 2,301 ft., 7-in. 1,914 ft., P.B. 1,925 ft., shot 1,915-23 ft.

### WILDCATS DRILLING

**East of the Meridian**

27-2-9, W½ SE NW.....Ramsey 1 Harryman
Drilling 4,650 ft., Coal County.
12-4-6, NE NW.....Hentzleman 1 Crawford
8-in. 548 ft., cleaning out at 650 ft., Pontotoc County.
15-4-6, SW NW.....Josephson 1 McCurry
T. D. 2,850 ft., electrical log, P.B. 900 ft., 5-in. 840 ft., Pontotoc County.
29-4-6, NE NW.....Cowley 1 White
S.D. 945 ft., Pontotoc County.
14-5-6, SE SE SE.....Norville 1 Fleet
Pennsylvania Caney 2,125 ft., T.D. 2,285 ft., electric log showed Calvin 1,220 ft., show oil and gas 1,240-63 ft., sand 1,934-48 ft., show oil and gas, sand 1,948 ft., water, P.B. 1,914 ft., Seminole County.
29-6-5, SE NE NW.....Hall-Jordan 1 Swan
T.D. 3,832 ft., new operator, Hembree-Hembree, to run pipe and test upper shows, Pottawatomie County.
31-7-7, SW NE NE.....Eagle 1 Mann
T.D. 2,208 ft., to run casing, Seminole County.
8-8-8, SE SE.....Hall-Jordan 1 Jennings
First report, Seminole County.
16-9-4, E½ NE SW.....Crosbie 1 School
Drilling 3,920 ft., Pottawatomie County.
11-9-9, SE SW SW.....Mid-Continent 1 Felix
First report, Hughes County.
13-9-9, SW SW NW.....Crowell 1-A Turner
10-in. 60 ft., Hughes County.
23-9-11, SW NW SE.....Arrow 1 Grannerman
Drilling 3,068 ft., Hughes County.
27-9-24, NW SW NW.....Western Oklahoma 1 Ward
Drilling 3,621 ft., Le Flore County.
34-10-3, NE SE SW.....Lippert 1 Rosebush
First report, Pottawatomie County.
36-10-3, W½ SE SW.....Hall-Jordan 1 Whitehead
Wilcox 5,234-45 ft., T.D., 7-in. 5,234 ft., flowed 1,419 bbl. in 24 hr. through 1-in. casing choke, S.I., Pottawatomie County.
11-10-8, NW SW SE.....Jones 1 Schults
Booch 3,039 ft., Gilcrease 3,276 ft., drilling 3,284 ft., Okfuskee County.
33-10-8, NE NE.....Mico 1 Davis
T.D. 3,513 ft., est. 5,000,000 cu. ft. gas and salt water, deepened to 3,531 ft., filled up 2,200 ft. with water, P.B. to 3,503 ft., 5-in. 3,488 ft., water, P.B 3,490 ft., water, S.D., Seminole County.
2-11-10, NE NE NW.....Sunray 1 Brooks
Bartlesville 2,285 ft., drilling 2,640 ft., Okfuskee County.
14-11-10, NW SW NW.....Alma 1 Replogle
T.D. 3,198 ft. in lower Cromwell, flowed 30 bbl. oil and 90 bbl. water, est. 3,000,000 cu. ft. gas, testing, Okfuskee County.
16-12-5, NE SW NE.....Morgan-Gulf 1 School
Hunton 4,900 ft., Viola 5,080 ft., cored dry dolomite 5,125-36 ft., coring 5,147 ft., Lincoln County.
15-12-9, NW SE NW.....Texas 1 Butcher
T.D. 4,048 ft., P.B. 3,323 ft., shot 3,310-23 ft., bail 46 bbl. in 24 hr., testing, Okfuskee County.
20-14-9, SW SE SW.....Burke-Greis 1 Peabody
Mayes 3,670 ft., drilling 3,810 ft., Creek County.
8-15-5, NE NE NW.....Wilcox 1 Curry
T.D. 4,100 ft., P.B. 3,495 ft., 7-in. 3,495 ft., Lincoln County.
32-15-5, SE SW.....Tabor 1 Schmucker
First report, Lincoln County.
20-18-1, SE SE NW.....Anderson-Prichard 1 McGuire
Cellar and pits, Payne County.
26-19-9, SE SE NE.....Jackson 1 Prince
Drilling 2,812 ft., Creek County.

**West of the Meridian**

33-2-5w, SE NE SW.....H. & P. 1 Cryer
T.D. 300 ft., Stephens County.
29-2-9w, SE NW SE.....Cooper 1-A Bowen
S.D. 1,500 ft., Stephens County.

12-2-5w, SE NW NW.....McCasland 1 Prine S.D. 2,108 ft., Stephens County.
36-4-21w, NW NE.....Mutual 1-A Caves T.D. 1,507 ft., fishing.
22-5-7w, NE SE.....Atkinson 1 Jelks S.D. 5,003 ft.
2-5-12w, SE NW.....Texas 2 Smith Cored 2,247-53 ft., no show, cored 2,253-64 ft., no show. Fernvale 2,340 ft., cored lime 2,343-46 ft., Trenton 2,370 ft., cored 2,410-13 ft., no show, drilling 2,457 ft., Caddo County.
13-7-2w, SE NW NE.....Delaney 1 Montgomery Drilling 6,814 ft., Cleveland County.
30-7-17w, NW NE SE.....Artie Baker 1 Coakley T.D. 1,287 ft., swab 1 bbl. oil an hr., and 3 bbl. water, S.D., Kiowa County.
17-15-3w, SW SE SW.....Continental 1 Lenigar 7-in. 4,720 ft., T.D. 4,747 ft., filled up est. 15 bbl. oil an hr., S.I. for tanks, Payne County.
18-17-1w, NE NW SE.....Big Chief 1 Hirzel Drilling 3,830 ft., Logan County.
29-21-1w, SE SW.....Samedan 1 Briggs Drilling 1,135 ft., Noble County.
8-23-4w, E½ NE NW.....Gulf 1 Schroeder First report, Garfield County.

**South of the Base Line**

7-3s-10e, SW SE SE.....Kirskey 1 Baskett S.D. for swab at 955 ft. in sandy lime, Atoka County.
18-3s-10e, NE SW NE NE.....Mattson 2 Rowland First report, Atoka County.
14-6s-14e, SW SE NE.....Taylor 1 Schussler Gas sand 825-51 ft., T.D., Choctaw County.
20-6s-18e, SE SW NE.....C. F. Carter 1-A Schull S.D. 335 ft., Choctaw County.
24-2s-15w, NW NE.....Price 1 Crow Drilling 1,987 ft., Tillman County.
8-3s-5w, NW SW NW.....Brown 1 Lowry Arbuckle 1,814 ft., T.D. 1,856 ft., P.B. 1,160 ft., 5-in. 1,113 ft., Stephens County.

## Permian Basin, Panhandle

*(Continued from Page 82)*

**WEST TEXAS COMPLETIONS**

**Andrews County**

North Cowden: Atlantic and Sun 3-B Holt, 306 bbl., open tubing, 518-qt. shot, 4,360-4,495 ft.

**Cochran County**

Slaughter: Milhoan Drilling 1-X Duggan, 779 bbl., open casing, 10,500 gal. acid, 4,940-5,014 ft.

**Crane County**

Waddell: Gulf 40 Waddell, 4,536 bbl., open casing, 6,000 gal. acid, 3,290-3,509 ft.
Tubb: Humble 53 Tubb, 1,069 bbl., open tubing, 4,496-4,530 ft.

**Ector County**

Foster: Forest Development 1-G Moss, 468 bbl., open tubing, 600-qt. shot, 4,140-4,341 ft.
Kewanee Oil 3 Foster, 339 bbl., open tubing, 940-qt. shot, 4,140-4,338 ft.
Johnson: Sinclair Prairie 1 Palmer, 2,808 bbl., natural 4,199-4,205 ft.
I. T. I. O. 4-F Johnson, 522 bbl., ½-in. choke, 792-qt. shot, 4,060-4,172 ft.
Goldsmith: Gulf 349 Goldsmith, 2,127 bbl., 4,179-4,232 ft.
Gulf 350 Goldsmith, 517 bbl., 400 gal. acid, 4,159-4,249 ft.

**Gaines County**

Wasson: Carter 5-A Moore, 668 bbl., 7/64-in. choke, 9,000 gal. acid, 4,905-95 ft.
Continental Oil 9-49 Wasson, 933 bbl., open tubing, 12,000 gal. acid, 4,900-5,066 ft.
Continental and Carter 11-44 Moore & Langdon, 646 bbl., 1-in. choke, 10,000 gal. acid, 4,910-5,049 ft.
Seminole: Magnolia and Atlantic 13-195 H. & J., 324 bbl., ½-in. choke, 6,000 gal. acid, 5,190-5,270 ft.

*(Continued on Next Page)*

## MISSISSIPPI AND SOUTHEAST

# Sharkey and Clarke County Wildcats Awaiting Test

By GEORGE WEBER

JACKSON, Miss., May 5.—Two wildcats in Sharkey and Clarke counties, Mississippi, still awaited testing last week. Both reported shows of oil and have casing set. In Sharkey County, British American Oil Producing Co. 1-A Houston estate has 7⅝-in. casing set at the top of a section, 3,278-96 ft., which recently drill-stem-tested 30 ft. of mud and 60 ft. of oil-cut mud, about one-quarter oil. Although information is not being released on the well, the interest shown by the company in further investments in the area, and the brisk royalty play in the well's vicinity are favorable indications. The wildcat is located 33 miles north of Vicksburg, and about 21 miles west of the Tinsley field. This week Hapel Avery staked 1 Cameron, about 17 miles north of the British American prospect.

### SUMMARY OF COMPLETIONS

| | No. | Bbl. | Footage |
|---|---|---|---|
| Oil wells: Tinsley | 5 | 4,086 | 25,514 |
| Dry holes: Tinsley | 1 | ..... | 5,510 |
| Total | 6 | ..... | 31,024 |

In Clarke County, Walsingham & Earles 1 School Land, Section 16-4n-15e, is being perforated at 3,740-50 ft. The 5½-in. casing string was set at 3,812 ft., with total depth at 4,057 ft. The wildcat has a stain and odor of oil in the top of the Tuscaloosa at 3,739-47 ft. which may be siderite staining. A deeper show was reported in sand at 4,047-57 ft.

Little of interest resulted from wildcatting elsewhere in the Southeast last week. The deepening of Magnolia 1 Culpepper, in Lauderdale County, for additional geological information is of considerable interest to geologists of the area.

### Tinsley

New outlets for crude and advanced prices are swelling Tinsley production and spurring drilling activity in the major oil field. Daily average production last week was 27,802 bbl., a new record, exceeding the former peak withdrawal rate during the production war in late August 1940. Contrasted with the estimated potential of 30,000 bbl. daily at that time, however, is the current estimated potential of 66,000 bbl. daily. Allied Pipe Line Co. is increasing purchases in the newly extended southeast sector of the field, and more Tinsley oil is being moved northward to St. Louis and Illinois by tank car and barge.

A Kansas pipe-line company is reported interested in obtaining contracts for Tinsley crude from two of the major producers. If successful, the company may lay a pipe line from the field to the Mississippi River, probably at Vicksburg.

A drill-stem test on the Marshall R. Young (Roeser & Pendleton) 1 Julia Wise, located in the SW cor. of Section 32-10-2, apparently defined the field's limit on the southeast last week. The test, taken at 5,026-48 ft., using a ⅜-in. choke on bottom and a ¼-in. choke on top, showed recovery of 1,760 ft. of oil cut with salt water and 305 ft. of salt water in 10 minutes. The Woodruff section was encountered at 5,032-48 ft., the top of which was only 17 ft. below the top of the Selma chalk. The thinning of the interval between the top of the Selma and the Woodruff zone made 1 Wise a probable oil producer, not expected from its low position on the Selma. The oil-water contact in the field was more definitely fixed as a result of this test, at −4,728 ft. subsea, giving the well about 18 ft. of oil section between the top of the Woodruff and the water level. The position of the outpost, to the southeast, will further incite the swing of activity to the south and west from present drilling wells. The contours on the Selma and Woodruff will be watched with considerable interest in the new direction of activity.

**MISSISSIPPI COMPLETIONS**

**Tinsley—Yazoo County**

J. P. Evans 3 Dalzell Johnson, SE NW 31-10-2, 1,175 bbl., ½-in. choke, T.P. 120 lb., T.D. 5,101 ft., 7-in. casing 5,097 ft., Woodruff 4,972-5,052 ft., perf. 4,972-5,018 and 5,022-47 ft.
Hassie Hunt 1 McMurtray, NW NW 25-10-3, 792 bbl., ½-in. choke, T.P. 100 lb., C.P. 175 lb., T.D. 4,868 ft., 7-in. casing 4,845 ft., Perry sand 4,846-68 ft., Woodruff 4,572-4,612 ft., perf. 4,574-4,604 ft., Perry and Woodruff sands.
Plains Production Co. 2 Milner, NW SW 7-10-2, 660 bbl., swabbed, T.D. 5,354 ft., 7-in. casing 5,350 ft., perf. 5,273-81 ft., Perry sand 5,273-5,312 ft.
Sinclair-Wyoming Oil Co. 2 Sorrell, SW NW 29-10-2, 840 bbl., ½-in. choke, C.P. 140 lb., T.D. 5,133 ft., 7-in. casing 5,123 ft., perf. 5,012-50 ft., Woodruff sand 5,012-5,118 ft.
Slick-Urschel Oil Co. 17 Slick, E½ SE 35-11-3, T.D. 5,510 ft., dry.
Union Producing Co. 2 Henderson, SE SE 25-10-3, 618 bbl., 24/64-in. choke, T.P. 140 lb., C.P. 190 lb., T.D. 5,058 ft., 7-in. casing 5,053 ft., perf. 4,950-78 ft. and 4,990-5,018 ft., Woodruff 4,951-5,019 ft.

**MISSISSIPPI NEW LOCATIONS**

**Wildcat—Sharkey County**

Hapel Avery 1 A. P. Cameron, NW SE NW 33-14n-6w.

**MISSISSIPPI WILDCATS**

**Chickasaw County**

Century Oil Co. 1-A Flaherty, S½ SW SW 8-13s-3e, deepening from 2,340 ft., fishing 2,000 ft., elev. 350 ft.

**Clarke County**

Walsingham & Earles 1 School Land, SW NW NE 16-4n-15e, T.D. 4,057 ft., set 5½-in. casing 3,812 ft., will perf. 3,740-50 ft., top Porters Creek 1,820 ft., Selma 2,250 ft., Eutaw 3,220 ft., Tuscaloosa 3,180 ft.

**Grenada County**

Grenada County Drlg. & Dev. Co. 1 Conn. General, drilling 3,127 ft.

**Lauderdale County**

Magnolia Pet. Co. 1 Culpepper, NW NE 4-8n-14e, drilling 6,125 ft., elev. 426 ft., top Tuscaloosa 2,815 ft., Paluxy 3,928 ft., Paleozoic 6,060 ft.

**Leake County**

Sinclair-Wyoming Oil Co. et al 1 Pearl River Lbr. Co., N½ SE NW 28-9n-6e, location.
R. W. Williams 1 Grant Allen, NW SE 26-12n-7e, drilling chalk 3,119 ft.

**Marshall County**

P. J. Lunati 1 fee, SW SE 31-3s-1w, stuck drill stem 1,061 ft., top Midway 500 ft.

**Montgomery County**

Henderson Oil Co. 1 School Land, SE NE NW 16-19n-6e, 10¾-in. casing 345 ft.

**Noxubee County**

Hope & Thompson 1 Donahue, C NW 25-16n-17e, T.D. 2,960 ft., preparing to core.

**Sharkey County**

British American Oil Prod. Co. 1-A Houston estate, NW NE SW 23-11-7w, "tight" well, set 7⅝-in. casing about 3,278 ft., to test oil show 3,278-96 ft.

**Warren County**

Waggoner Bros. Oil Co. 1 Parker, NW NW 17-14n-1e, T.D. 7,013 ft., preparing to drill deeper.

**Yalobusha County**

J. E. Green 1 Walter Goldman, SE NW 23-25-6e, deepening from 1,375 ft., S.D. 2,400 ft.

**Yazoo County**

Sinclair-Wyoming Oil Co. 1 C. C. Swayze, W½ E½ W½ 23-12n-1e, location.

## CRUDE-OIL PRICES IN REPRESENTATIVE FIELDS

The last complete schedule of crude-oil prices appeared in the issue of May 1. The next complete schedule will appear in the issue of June 5. Prices below are representative for the areas in which no changes have occurred since May 1.

Michigan crude-oil prices were advanced 10 cents and Kentucky crudes 5 cents by all purchasers in those two states on May 1. South Penn Oil Co. raised Corning grade crude 7 cents per barrel on May 2.

Magnolia Petroleum Co.'s advance of 5 cents on Illinois basin crudes was made effective May 1, rather than on April 28, as previously reported. Current quotations in Illinois, Indiana, Michigan, Kentucky, Pennsylvania, Ohio, and West Virginia, which cover all advances and corrections of this and last week are shown below:

**EASTERN STATES**

**Pennsylvania and Ohio**

*South Penn Oil Co.:*
Corning grade, 5-2-41 ..... 1.24

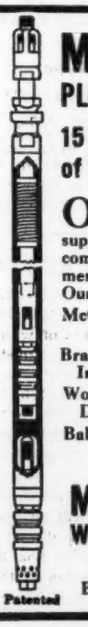
**Kentucky**

*Ashland Refining Co.*, 5-1-41:
Big Sandy River ..... $1.22
Kentucky River ..... 1.30
Western Kentucky ..... 1.20
*Sohio Corp.*, 5-1-41:
Birk City ..... $1.05

**MIDDLE WEST FLAT PRICES**

**Michigan**

*Simrall Corp.*, 5-1-41:
Greendale, Porter, Vernon, Crystal, and Wise ..... $1.37
Buckeye, Bentley, Edenville, Beaverton, and Monitor (sweet) 1.25
Freeman-Redding, Lincoln, and Winterfield ..... 1.32
Hamilton-Grout ..... 1.22
West Branch-Arenac ..... 1.17
*Sohio Corp.*, 5-1-41:
Bloomingdale-Columbia ..... $1.38
*Mid-West Refineries, Inc.*, 5-1-41:
Kent County ..... $1.35
*Pure Transportation Co.*, 5-1-41:
Greendale, Porter, Crystal, Vernon, and Wise ..... $1.37
Freeman-Redding and Lincoln .. 1.32
West Branch, Adams-Arenac ... 1.17
Midland ..... 1.37

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**15 Different Types of Working Barrels**

OUR aim is to satisfy our customers by supplying them with a complete line of equipment for pumping wells. Our line includes:

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**McGREGOR WORKING BARREL COMPANY**

Bradford, Pa., U.S.A.

Patented

Ohio Oil 8 Tippett, 765 bbl., ½-in. choke, natural, 5,087-5,278 ft.
Skelly Oil 1 Robertson, 691 bbl., ½-in. choke, 2,600 gal. acid, 5,180-5,290 ft.

**Hockley County**

Slaughter: S. W. Richardson 2 Barry, 828 bbl., 2-in. casing outlet, 8,000 gal. acid, 4,875-4,999 ft.
S. W. Richardson 8 Coe, 342 bbl., 2-in. casing outlet, 10,000 gal. acid, 4,880-4,986 ft.
S. W. Richardson 11 Coe, 1,097 bbl., 2-in. casing outlet, 10,000 gal. acid, 4,909-85 ft.
S. W. Richardson 11 Slaughter, 988 bbl., 2-in. casing outlet, 4,879-4,954 ft.
S. W. Richardson 5 Denton, 745 bbl., 2-in. casing outlet, 10,000 gal. acid, 4,860-4,970 ft.
W. J. Richardson 5 Allison, 902 bbl., 2-in. casing outlet, 10,000 gal. acid, 4,895-4,980 ft.
San Andres Production 5 Caddell, 461 bbl., 2-in. casing outlet, 10,000 gal. acid, 4,890-4,964 ft.
Western States Gasoline 2 Mallet, 734 bbl., open casing, 10,000 gal. acid, 4,950-99 ft.

**Pecos County**

White & Baker: Childress Royalty 2-B White & Baker, 75 bbl., 60-qt. shot, 2,060-79 ft.
Tobarg: Cardinal Oil 63-E Tippett, 8 bbl., pumping, 334-47 ft.
Taylor-Link: Allen Hargrave 1 University, 1,730 ft., dry.
Abell: Magnolia 1 Crockett, 1,210 bbl., 1-in. choke, 5,298-5,335 ft., top Simpson 4,755 ft., Tulip Creek, 5,000 ft.

**Upton County**

McElroy: Gulf 50 Crier-McElroy, 5,487 bbl., open casing, 610-qt. shot, 2,670-2,865 ft.
Gulf 51 Crier-McElroy, 347 bbl., open casing, 680-qt. shot, 2,715-2,903 ft.

**Ward County**

O'Brien: Gulf 167 O'Brien, 1,038 bbl., open casing, 490-qt. shot, 2,620-2,795 ft.
North Ward: H. I. Waid 6 Brown, 40 bbl., 1,814-70 ft.
Keystone: Standard Oil of Texas 18-54 Baird, 198 bbl., open casing, 560-qt. shot, 3,158-3,350 ft.

**Yoakum County**

Wasson: Aloco Oil 3 Moore, 594 bbl., open tubing, 620-qt. shot, 5,040-5,245 ft.
Argo Oil 10-A Comer, 952 bbl., open tubing, 13,000 gal. acid, 5,030-5,225 ft.
Continental and Carter 9 Willard, 524 bbl., ½-in. choke, 9,000 gal. acid, 4,886-5,055 ft.
Mabee Oil & Gas 3-D Willard, 802 bbl., open tubing, 10,000 gal. acid, 4,950-5,195 ft.
Shell 15-B Baumgart, 1,139 bbl., open tubing, 10,000 gal. acid, 4,960-5,170 ft.

## TEXAS PANHANDLE

AMARILLO, Tex., May 5.—New development for the summer months in the Panhandle fields was assured last week with the staking of 30 new locations to bring the total new locations since the first of the year 1941 to 292, a high almost reaching that of the heyday of the field. Of the 30 locations they were divided as follows: Hutchinson with 16, Gray with 12 and Wheeler County with 2. Phillips Petroleum Co. announced 11 of the new starts.

Together with increased drilling activity for the field was the continued increase in field production. Panhandle production the past week averaged 85,508 bbl. daily which was 1,888 bbl. daily in excess of the week previous. Total runs for the week amounted to 577,556 bbl. The average daily production, per well, for the 4,954 wells in the fields, was 16.7 bbl.

### TEXAS PANHANDLE COMPLETIONS

(24-hour pumping gages)

**Gray County**

Gulf 12 Saunders, 240 bbl., 510-qt. shot, 3,000-92 ft.

**Hutchinson County**

Benonine Oil 12 Starnes, 325 bbl., 450-qt. shot, 3,128-77 ft.
Cree, Hoover & Dye 10 Harvey, 151 bbl., 180-qt. shot, 3,007-57 ft.
Kewanee Oil 53 Lewis-Badger, 411 bbl., 370-qt. shot, 2,965-3,065 ft.
Phillips 54 Cockrell, 199 bbl., 360-qt. shot, 2,840-2,918 ft.
Phillips 57 Cockrell, 244 bbl., 400-qt. shot, 2,960-3,076 ft.
Phillips 3 Lizzie, 186 bbl., 210-qt. shot, 3,140-3,200 ft.
Skelly 15 Watkins, 340 bbl., 485-qt. shot, 2,695-2,785 ft.

**Wheeler County**

Portman & Jenkins 2 Sloss, 233 bbl., natural, 2,096-2,101 ft.

## SOUTHEAST NEW MEXICO

HOBBS, N. M., May 5.—Contracts for pressure-maintenance systems in the Maljamar and Loco Hills oil fields, the ultimate costs of which will exceed half a million dollars, have been signed. Operators of the Maljamar field have contracted with Frick-Reid Supply Co. of Tulsa to build their plant, including a casinghead unit capable of making 12,000 to 15,000 gal. daily at a cost of $292,000. The Loco Hills Pressure Maintenance Association contracted with Sanders Brothers of Artesia for about $140,000 for a turn-key job on the Loco Hills plant and for construction of necessary pipe lines, cost of which will be borne by the association and will bring the total cost of that job near the quarter-million mark. It has been estimated by engineers that the installation of the pressure-maintenance system will increase ultimate recovery 100 per cent.

Richmond Drilling Co. has staked a wildcat, 1 State, SW SE 27-17s-33e, in an attempt to link the Maljamar and Vacuum fields. Contract depth is reported to be 4,800 ft The well is on a Shell farmout and Phillips is reported to be financially interested.

### SOUTHEAST NEW MEXICO COMPLETIONS

**Eddy County**

Artesia: Polyhar et al 1 State.....NW NW 3-18s-28e 40 bbl., T.D. 2,250 ft.
Skelly: Skelly 2-A Lynch.....SW NW 22-17s-31e 60 bbl., T.D. 3,893 ft.
Dayton: Brewer Drlg. Co. 2 Williams NW NW 25-18s-26e 27 bbl., T.D. 1,049 ft.

## West Central Texas Fields

*(Continued from Page 85)*

ing a 330-qt. shot. This well is the thirteenth consecutive producer to be drilled in the field.

### Palo Pinto Field Extension

A two-location southeast extension for the Nowles field, 5 miles east of Stamford and on the Jones-Haskell county line, was indicated at J. C. Hunter et al 1-B Strand. The outpost to the small and yet little developed field, cored oil-saturated Palo Pinto lime from 3,446-56 ft. and cemented casing at 3,444 ft. for completion attempts this week. The test is 1,000 ft. southeast of the operator's first well on the tract which made a small pumper and extended production across the Haskell County line into Jones County.

Another small Palo Pinto lime producing area, the North Avoca field, received some attention as two new tests were preparing to start. King Oil Co., Wichita Falls, staked two outpost tests to the small and little developed field. The company's 2 L. Almquist is located 1,030 ft. east of 1 Almquist, a completed test, and is 330 ft. from the south and 1,360 ft. from the west lines of the SE¼ Section 191, B.B.B.&C. Survey. The company's other location was 3 A. E. Olson, 1,029 ft. east of 2 Olson and 330 ft. from the north and east lines of Section 189, B.B.B.&C. Survey.

### WEST CENTRAL TEXAS COMPLETIONS

**Brown County**

Bang: Hogan & Stewart 4 Perry, dry at 936 ft.

**Callahan County**

Wildcat: Kleiner & Acers 1 Snyder, Sec. 3, T.&N.O. Sur., show for est. 3,000,000 cu. ft. gas 847-54 ft., dry at 1,002 ft.
Putnam: Carvin & Stokes 1 Williams, dry at 608 ft.
Callahan: Ungren & Frazier 1 Hardy, dry at 1,291 ft.

**Coleman County**

Coleman: Harry N. Neeb 1 Davidson, dry at 987 ft.

**Eastland County**

Carbon: Imperial Oil 1 Jackson, 250 bbl. daily, flowing, 190-qt. shot, 2,513-17 ft.

**Jones County**

Lewis: Sandy Ridge Oil 3 Brock, 116 bbl. daily, ¼-in. choke, 30-qt. shot, 2,011-25 ft.
Petroleum Prod. 6 McKeown, 262 bbl. daily, open tubing, 40-qt. shot, 1,853-65 ft.
Sayles: F. K. Johnson and Ungren & Frazier 8 Sayles, Jr., 106 bbl. daily, open tubing, 20-qt. shot, 1,918-26 ft.

**McCulloch County**

Wildcat: A. K. McCord 1 Nelson, E. Gruene Sur. No. 957, dry at 331 ft.
I. E. Clark 1 Lively, Sec. 931, H. F. Hetzfeldt Sur., top Ellenburger 945 ft., dry at 991 ft.

**Runnels County**

McMillan: Art Tucker 2 King estate, 178 bbl. oil and 178 bbl. water, 2,332-58 ft.

**Shackelford County**

Albany: E. E. Yates 1 Chilton, dry at 808 ft.
Shackelford: T. S. Stanfield 1 Hendrick, dry at 921 ft.
R. H. Roark 2 Snyder, dry at 746 ft.
Wildcat: Cecil Young 3 Simpson, W½ Sec. 13, B.A.L. Sur., dry at 486 ft.

### WEST CENTRAL TEXAS WILDCAT REPORT

**Brown County**

Guyle Greynolds 1 Crownover, 467 ft. from S and E lines Sec. 26, B.B.B.&C. Sur., 3,000-ft. test, reaming 1,648 ft.
Central Tex. Gas 1 E. S. Smith, NE cor. of W 199 acres of S 291 acres of Wm. Guyman Sur. 86, 2,000-ft. test, fishing 1,868 ft.
H. P. Evans 1 Starkey, SE SE Sec. 3, H. C. Walker Sur., 1,200-ft. test, S.D. 150 ft.

**Callahan County**

W. D. Austin 1 I. N. Jackson, 150 ft. from N and W lines, Sec. 2, C.&M. Sur., S.D. 982 ft.
Yates & York 1 Huestis, NE NW Sec. 3198, T.E.&L. Sur., 600-ft. test, spudded and shut down.
Slay & Hyer 1 Hennessy, NE SW Sec. 83, B.B.B.&C. Sur., 1,800-ft. test, drilling 1,620 ft.

**Coleman County**

L. J. Derrick 1 J. W. Vance, 330 ft. NW of old Texas 1 Vance, also in Sec. 101, E.T. Sur., 3,000-ft. contract, spudded and shut down.
West Coast Prod. Corp. 1 Morris, SW cor. of NE 160 acres, J. Greenwood Sur. 304, 7-in. at 2,170 ft., T.D. 2,605 ft., 1,000 gal. acid, cleaned and showed small amount free oil.
Cooper Brothers 1 McClure, 1,100 ft. from S and 2,400 ft. from W lines of T. R. Frizzell Sur. 711, 2,800-ft. test, S.D.O. 920 ft.
States Oil 1 Hudson, NW SW Sec. 22, Blk. 2, T.&N.O. Sur., 3,600-ft. test, top sand 3,330 ft., 7-in. at 3,325 ft., show 10,000,000 cu. ft. gas from 3,482-86 ft.
McMillan & Rominger 1 Wilkerson, 1,570 ft. from N and 257 ft. from W lines Sec. 3, Blk. 2, G.H.&H. Sur., 2,800-ft. test, prepare to start up.
A. P. Heinze 1 Whittington, NW SE Sec. 4, Blk. 2, T.&N.O. Sur., 3,800-ft. test, S.D. 825 ft.
G. C. Collier 1 Stafford, Alderata Sur. No. 275, 1,500-ft. test, fishing 900 ft.

**Concho County**

Floyd C. Dodson 1 Robert Wilson, Thomas Green Sur., 10 mi. SW Eden, show oil and gas 3,792-95 ft., 3,819-20 ft., at 3,828-29 ft. showed 1 bailer water per hr., correction, T.D. 3,829 ft., prepare drill deeper.

**Eastland County**

Arnold, Kirk et al 1 J. W. Adams, Jr., 2,708 ft. from N and 761 ft. from E lines David McFadden Sur., 2,600-ft. test, top Caddo 2,457 ft., T.D. 2,730 ft., show gas 2,727-30 ft., running 7-in. casing.

**Fisher County**

General Crude Oil 12 Flanigan, center of old Royston field, top Ellenburger 6,094 ft., treated 5,000 gal. acid at 5,920 ft., no results, cleaning out to retest, T.D. 6,746 ft.
F. A. Stephenson 1 Humphries, NW NW Sec. 49, Blk. 1, H.T.&B. Sur., top lime 2,985 ft., dry lime 2,985-92 ft., T.D. 3,020 ft., show oil 3,018-20 ft., cleaning out.
Landers & Eisele 1 Mose Newman, SE NW Sec. 8, Blk. 20, T.&P. Sur., drilling 4,895 ft.
P. R. Long 1 Maberry, SE cor. A. A. Spring Sur., 2 mi. SW of McCaully, show oil 3,250-79 ft., waiting on spudder.

**Hamilton County**

Lone Star Gas 1 Burks, 1,654 ft. from NE and 1,175 ft. from NW lines James Hays Sur. 16, Pat. D-705, 3,000-ft. test, location.

**Jones County**

H. Hines and W. D. Brookover 1 A. M. Wimberly, SW SW Subd. 91, De Witt C.S.L. Sur., installing pump, est. 50 bbl. oil per day, T.D. 2,552 ft.
Danciger Oil & Ref. 1 Jacob Foster, SE½ W 100 acres, SW¼ Sec. 13, Blk. 13, T.&P. Sur., 3,000-ft. test, S.D. 2,976 ft.
S. B. Roberts 1 Cooper, SE SE SW Sec. 20, Blk. 15, T.&P. Sur., 4,000-ft. test, 5½-in. at 4,919 ft.
W. W. Fondren 1 C. P. Rogers, 126-acre tract in N¼ Sec. 32, Blk. 18, T.&P. Sur., 3,100-ft. test, drilling 2,945 ft.
Groover & Rose and Jones & Stasney 1 Owens, SE SE Sec. 46, Blk. 15, T.&P. Sur., S.D. 2,260 ft., T.D.
J. J. McMahon 1 Miller, 400 ft. from S and 330 ft. from E lines Lot 13, Warren Subd. 125, drilling 1,692 ft.
Merry Bros. & Perrini and Butler and Horne Drilling Co. 1 Collins, Lot 25, Godwin & Warren subd., drilling 1,755 ft.

**McCulloch County**

C. M. Joiner Corp. 1 Lawson, NW cor. Sur. 1093, location.

**Mills County**

C. D. Lane 1 Egger, 2,078 ft. from N and 450 ft. from W lines Sec. 4, Wm. Maynes Sur., 3,500-ft. test, S.D. 901 ft.
Three Widows Oil 1 Burdett, 467 ft. from N and W lines Lot 59, Hayes C.S.L. Sur., 3,000-ft. test, S.D. for 12½-in. casing 235 ft., T.D.

**Palo Pinto County**

Hickok Prod. and Reynolds 1 J. R. Halsell, 467 ft. from S and W lines Sec. 92, B.B.B.&C. Sur., Abst. 105, 5,500-ft. test, drilling 4,550 ft.
W. K. Gordon 1 Nolan, NE SE Sec. 86, Blk. 3, T.&P. Sur., est. 2,000,000 cu. ft. gas from 3,450-62 ft., P.B. from T.D. 4,063 ft., shot 40-qt., testing.
P. F. Cole 1 Crawford, 467 ft. from W and 90 ft. from N lines Sec. 888, T.E.&L. Sur., 5,000-ft. test, running 10-in. at 840 ft.

**Parker County**

J. L. Higginbotham 1 Wheeler, SE cor. J. B. Brannon Sur., Abst. 1928, 5,000-ft. test, T.D. 80 ft., moving in cable tools.

**Shackelford County**

J. F. Baker and M. E. Daniels 1 Davis, SE NW Sec. 3, Blk. 13, T.&P. Sur., S.D. 2,265 ft.
Glen Myers 1 Green, SE NW Sec. 68, Blk. 12, T.&P. Sur., 1,500-ft. test, S.D. 950 ft.
Aragon Oil 1 Walls Pasture, SW cor. Sec. 39, B.A.L. Sur., 4,000-ft. test, drilling 1,175 ft.

**Somervell County**

M. E. Davis 1 Cousins, 457 ft. from SE and NE lines of tract in John Echols Sur., 7,500-ft. test, drilling 74 ft.

**Stephens County**

C. Andrade III 1 Walls Pasture Co., NE cor. Sec. 13, O.A.L. Sur., 3,800-ft. test, first report.

**Stonewall County**

Leader Oil 3 Carlisle, 2,136 ft. from N and 2,127 ft. from E lines of Sec. 292, Blk. D, H.&T.C. Sur., 5,250-ft. test, drilling 4,345 ft.

## Texas Gulf Coast

*(Continued from Page 101)*

**Jefferson County**

Humble 1 Dr. W. C. Baird, W. P. H. McFaddin Sur. No. 5, coring sand 3,181 ft.

**Montgomery County**

Housh & Thompson 2 Clary, West Conroe area, William S. Allen Sur., drilling shale 3,394 ft.
D. B. MacDaniel 1 Baldwin, T.D. 9,741 ft., preparing to deepen.

**Wharton County**

Lon H. Cron et al 1 McGill, Lissie area, A. Schwartz Sur., S.D. 6,531 ft.
S. W. Richardson 1 J. T. Jones, S. P. Middleton Sur., drilling shale 4,980 ft.

# Paloma's Unit Plan Getting Nod From Landowners, Operators

*Continued from Page 32)*

any lease or agreement made by or with them, without accounting therefor to the parties, through the committee or otherwise. Taxes on interests other than mineral rights and on improvements except as above provided shall not be charged to joint expense and this agreement shall not be applicable thereto.

**ARTICLE 13**

**Titles**

A. *Evidence of title.*—Each party shall deliver to the committee copies of all oil and gas leases, deeds, operating agreements, and other contracts evidencing the operating rights of such party and its rights to possession of lands subject to this agreement, together with copies of all title reports and title-insurance policies in its possession pertaining to said lands.

B. *Indemnity.*—Each party agrees to indemnify and hold harmless all other parties for all loss and damage sustained by them as a result of any failure of title to all or any portion of its participating land by reason of any defect or condition neither appearing of record nor shown in its title or policy unless it shall have disclosed the same to the parties hereto or the committee on or before the date of its execution hereof or had no knowledge thereof at such date.

**ARTICLE 14**

**Exclusions From Participating Lands**

Any land once classified as part of the participating lands shall not be excluded therefrom by reason of being proved incapable of production or for any other reason than the determination of a total lack of any right in any party hereto to drill for and produce unitized substances therefrom, such determination to be made either by the written admission of the lessee thereof or by the final judgment of a court of competent jurisdiction; provided, however, that in case it be determined in the manner aforesaid that there is an outstanding interest not included hereunder in such lands or any part thereof, then the party hereto claiming to be the lessee of such land shall be allowed a time deemed reasonable by the committee, but in no event less than 60 days, within which to acquire such outstanding interest. If such party fails to acquire such interest, the committee may permit the holder thereof to be substituted pro tanto for such party, or may purchase such interest for the parties hereto, or may exclude such lands herefrom.

**ARTICLE 15**

**Additions to Participating Lands**

A. *By committee action.*—The committee is authorized by the affirmative vote of three-fourths of its members to add to the participating lands from time to time any nonparticipating lands which it classifies as productive of unitized substances even though no productive well has been drilled thereon; but in the case of lands other than controlled lands, at any time—and in the case of controlled lands, on or after January 1, 1946—the written consent of the owners and lessees thereof (and of other interested persons unless waived by the committee) must first be obtained. The execution of this agreement by a lessee with the consent of its lessor and other interested parties shall constitute the only required consent for the addition of any controlled lands to participating lands before January 1, 1946.

B. *By drilling.*—If any well on nonparticipating controlled lands shall, before January 1, 1946, become a productive well in the Paloma zone, the controlled lands deemed proved thereby shall ipso facto become participating land. If, on or after January 1, 1946, any such well shall become a productive well in the Paloma zone, each parcel of controlled lands deemed proved thereby shall ipso facto become participating land if the lessee of such parcel (with the written consent of the owner) shall have notified the committee within 30 days after commencement of the actual drilling of the said well, or before January 1, 1946, if such drilling was commenced more than 30 days prior thereto, that it elects to have the said parcel added to the participating lands in the event said well shall prove to be a productive well. The land deemed proved by any such well shall be determined in the following manner:

A circle whose radius is 1 mile plus the shortest distance between the new productive well and the boundary of the participating lands shall be drawn with said well as the center. Straight lines joining the well location with the points where said circle intersects the boundaries of the participating lands shall be drawn, forming an angle opening in the direction of the participating lands. If there be more than two points of intersection, the two lines chosen shall be those which will form the largest possible included angle. The boundaries of the proved area shall then be set by including the quarter-quarter section or fractional quarter-quarter section in which said well is located, together with each quarter-quarter section or fractional quarter-quarter section which has 10 acres or more within the angle formed by said lines.

**ARTICLE 16**

**Effect of Changes in Participating Lands**

A. *Additions.*—Participation on account of any addition to participating lands shall not be retroactive but shall commence on the date of such addition, and shall apply to existing facilities and to unitized substances thereafter distributed; provided, however, that the lessee of the added land shall pay to the committee, for all parties hereto, its pro rata share of the excess, if any, of the total of all previous calls by the committee hereunder over the total value, as determined by the committee, of all unitized substances theretofore distributed to the parties, such share to be in the ratio of the acreage of the added lands to the total acreage of the participating lands as so increased.

B. *Exclusions.*—Upon the exclusion of any participating land, the parties hereto through the committee shall pay to the party hereto whose lands are excluded the excess, if any, of the contributions theretofore made by such party on account of such excluded lands over the total value of the unitized substances allocated to the lands so excluded and distributed to such party. However, the committee may deduct from the amount payable under this paragraph any amount necessary to satisfy the claims of the other parties hereto under the provisions of Article 13 hereof.

**ARTICLE 17**

**Wells on Nonparticipating Lands**

Whenever nonparticipating controlled lands shall be classified by the committee as participating or shall automatically become participating, any productive well on said land or any well being drilled thereon shall be taken over by the committee and the committee shall pay to the party who drilled or is drilling such well the cost thereof up to the time it is so taken over, determined as provided in Exhibit C, but in no event to exceed $150,000, unless such party elects to retain such well for the purpose of exploring for or producing from a zone or zones other than Paloma zone; provided, however, that if before such well was commenced said party had given notice in writing to the committee of its intention to drill the same specifying the proposed location thereof such party shall in lieu of said cost be entitled to receive from the committee twice the said cost but in no event more than $200,000, unless the committee, within 15 days after such notice of intention to drill, shall have notified such party that the committee elects to cause the well to be drilled at the expense of the parties hereto, in which latter event the committee shall cause operations for such drilling to be commenced within 30 days after its said election, either at the location proposed by the party giving such notice or at another location on the same leased premises at least as far from the boundary line of the participating lands as the said proposed location and not more than 1,000 ft. from such proposed location.

If the committee shall cause any well to be drilled on nonparticipating lands and the same shall be found not to be a productive well in the Paloma zone, the lessee of the land on which it was drilled shall have the right, upon payment to the committee, for distribution among the parties hereto, of the reasonable salvage value of casing and other equipment therein, to take possession of said well.

**ARTICLE 18**

**Covenants to Run With Land**

The covenants herein contained are for the benefit of each parcel of the controlled lands and are made expressly for the assigns of each covenantor and to the assigns of each covenantee, and are intended to and shall run with such lands.

**ARTICLE 19**

**Notices**

Any notice required or permitted to be given by a party to the committee or to all of the other parties hereto shall be given by the delivery or mailing of a copy thereof to each member of the committee. Any notice required or permitted to be given by the committee to any party shall be given by mailing a copy thereof to the office of such party or by delivering a copy thereof to the committee member representing such party. Notices shall be complete 48 hours after the date of mailing. The addresses appearing after the respective signatures to this agreement shall be the addresses to which notices shall be mailed to the parties hereto. Notices mailed to any committee member shall be addressed in care of the company represented by him. Any party may change its address by a notice to the committee and to all the other parties.

**ARTICLE 20**

**Term**

A. *Effective date.*—1. This agreement shall become effective when it is approved by the state oil and gas supervisor pursuant to the provisions of Section 3301 of the Public Resources Code of the State of California, and is executed by at least four lessees, with the written consent of their respective lessors and royalty owners representing at least 50 per cent of the acreage within the shaded area. Such consent shall contain substantially the same provisions as the form annexed hereto marked Exhibit D, which provisions shall be binding not only on the lessors and royalty owners executing such consent but also on the lessee of the land described therein. If any lessee holds more than one lease and is unable to obtain the necessary consents for each thereof, its rights and obligations hereunder shall be limited to the land included in the lease or leases for which such consents are obtained.

2. After the effective date of this agreement, other lessees, with the like consent of their lessors and royalty owners, may become parties thereto; provided that on and after July 1, 1941, the consent of the committee shall also be required. In like manner and with like consents any lessee who became a party only with respect to a part of the land held by it may thereafter increase its rights and obligations by extending this agreement to additional land held by it.

The foregoing requirement for the obtaining of the consent of any royalty owner other than a lessor may be waived by the committee when deemed by it advisable. If such requirement be so waived in any case and the obligations to the royalty owner be in excess of those which would follow from the execution of a consent by such royalty owner, the parties hereto shall ratably contribute to the payment of such excess.

B. *Termination.*—This agreement shall remain in effect as long as any of the controlled lands shall produce or be deemed by the committee to be capable of producing unitized substances in paying quantities, or until it shall have been terminated by the unanimous consent of the parties hereto.

IN WITNESS WHEREOF, this agreement is executed by each of the undersigned on the date set opposite its name.

# Automotive Fuel Stocks Fall

*(Continued from Page 26)*

requirements of industry in equipping and maintaining larger forces under arms.

The latest complete figures available for peacetime consumption by the Army, Navy and Coast Guard covering 1938 show the three services in that year to have used a total of 11,536,845 bbl. of all types of petroleum.

Figures on aviation gasoline and lubricating oil consumed by the Army in 1939 and 1940 have not been reported as contrary to public interest. Consumption of aviation gasoline in 1938 by the three service branches was 1,042,036 bbl., which, of course, has expanded substantially and is still on the increase. Still, the requirements of aviation gasoline, reported for all classes of flying by the Bureau of Mines consumption figures for 1940, were only 5,368,000 bbl. last year, which was less than 1 per cent of last year's total domestic demand for all types of motor fuel.

# Personal Paragraphs

REESE H. TAYLOR, president of Union Oil Co., has returned to his offices in Los Angeles, Calif., from a business trip to New York and Washington, D. C.

C. H. HATHAWAY, assistant to the president of Gulf Refining Co., was the principal speaker at a banquet honoring veteran employes of the company in the Shreveport, La., district recently. W. L. BAKER, district superintendent of the De Soto Red River area, North Louisiana, was presented with a 30-year service pin.

MARTIN B. CHITTICK, manager of specialty and technical sales, Pure Oil Co., has been called for active service in the chemical-warfare branch of the U. S. Army. He has held a commission in the chemical-warfare reserve for many years and saw service in the first World War. He has been with Pure Oil since 1922. His reserve rank is lieutenant colonel.

CHARLES CONDITT BARNETT, formerly assistant engineer with Union Producing Co. at Beeville, Tex., has been promoted to the position of assistant district engineer in the Wichita Falls office of the company. He is succeeded in Beeville by DONALD TRAVIS MAST, who is promoted to that position from assistant engineer in the general office engineering department, Shreveport, La.

SAMUEL L. N. BURK, chief job analyst of Atlantic Refining Co., addressed the second annual Southwestern Area Conference on Industrial Relations, held at Houston, Tex., May 2 and 3. He discussed "Better Understanding of the Wage Problem." Other oil men on the program were LAWRENCE A. APPLEY, formerly of Socony-Vacuum Corp. and now counsel to the secretary of war, and CAPT. A. A. NICHOSON, personnel director of the Texas Co.

HERMAN SCHALLER has succeeded R. E. PENCE, in the California Oil Umpire's office, who was called for active duty in the Navy. Mr. Pence has been doing depth-pressure work and Mr. Schaller has been a petroleum engineer on Los Angeles Basin fields.

B. B. BLAKENEY is retiring after many years as chief counsel in Oklahoma for Magnolia Petroleum Co. He joined the company in 1917. His associates honored him at a dinner Friday night. He will be succeeded by W. R. WALLACE, who has been with the company for 16 years. Mr. Wallace is chairman of the Oklahoma Public Welfare Commission.

HAROLD MOORE, of Shell Oil Co., Inc., is president of the newly formed Wichita (Kans.) chapter of Toastmasters International. This organization has 187 active chapters throughout the United States. Its purpose is to develop public speakers and to participate in civic activities. S. W. HOLMES, Shell Oil Co., Inc., is deputy governor.

PAUL WEAVER, chief geophysicist for the Gulf Oil Corp., Houston, Tex., discussed "Radioactivity of Rocks—What It Is and What It Means" at the monthly meeting of the East Texas section of the American Institute of Mining and Metallurgical Engineers at Tyler, May 5. M. L. CASHION, assistant general superintendent of production of the same company, presented a motion picture in color which was taken by himself of the capping of a wild well in the West Bay field, Plaquemines Parish, Louisiana.

R. D. WALLACE, Casper, Wyo., independent operator, has returned to his duties after spending several weeks recovering from injuries suffered in an automobile accident.

J. T. REEVES, production manager with Sinclair-Wyoming Oil Co., Jackson, Miss., has been transferred to Carmi, Ill. Replacing Mr. Reeves is J. P. HOLLE, transferred from Breckenridge, Tex.

WILLIAM P. PETITT, district construction foreman in the London district for Humble Oil & Refining Co., has been promoted to division construction foreman and transferred to the Southwest Texas division offices at Corpus Christi, Tex.

FRANK BASS, district superintendent for the Humble Oil & Refining Co., in the Greta district, Refugio County, Texas, has been transferred to the Flour Bluff district, Nueces County, replacing J. L. MOWERY, who was transferred to the Greta district.

HERMAN F. DAVIES, formerly manager of the producing department of the California Co. in the Rocky Mountain division, has been named vice president in charge of operations and is transferring from Denver, Colo., to the company's new offices at New Orleans, La. RALPH D. COPLEY, formerly assistant manager, will be in charge of the company's Rocky Mountain operations at Denver.

## Do You Remember?

From The Oil and Gas Journal Files

### 25 YEARS AGO

Fifteen years ago this month, David R. Beatty sold the famous Beatty gusher at Beaumont, Tex., to Robert L. Henry of Chicago, for $1,250,000 cash.

Economy in the use of gasoline is being enforced in all districts throughout Great Britain and Ireland. Use of motor spirit for pleasure rides in automobiles is regarded as waste.

### 20 YEARS AGO

A meeting of oil producers was held in Tulsa on Tuesday to discuss the situation created by the 25-cent reduction in the price of crude oil. A committee was appointed to go before the Oklahoma Corporation Commission to discuss the question of a shutdown.

Recent statements concerning the early beginning of the Mackenzie River field in northern Canada are disputed by Dr. T. O. Bosworth, the Canadian geologist. Dr. Bosworth headed the geologists who (in 1914) journeyed to the Far North and staked out the claims on which the Imperial Oil Co. has since struck oil.

### 10 YEARS AGO

Transportation costs from the gas fields in the Southwest preclude the possibility that gas will become such a "cheap" fuel as to displace much coal, Samuel Insull, Jr., told employes of the Peoples Gas, Light & Coke Co., in Chicago.

Bids on repairs for the 11 wells on Naval Petroleum Reserve No. 3, Teapot dome, were opened at the office of the inspector, Comdr. A. A. Baker, U. S. Navy, in Casper, Wyo. H. V. Meabon was the lowest bidder.

FRED W. TURNER, Turner Petroleum Co., was married last week to Miss Virginia Christie, in Mount Pleasant, Mich.

DEAN H. SHELDON, formerly with the Union Oil Co. of California in Compton, is now petroleum engineer with R. E. Havenstrite in Los Angeles.

W. F. PRENDERGAST, of Imperial Oil, Ltd., head office at Toronto, Canada, has been elected president of the Toronto Canadian Club for the ensuing year.

JOHN PAYNE HAMMOND is now engineer with the Mid-Union Drilling Co., in Wichita Falls, Tex. He was formerly with the Royal Petroleum Corp., in Tulsa.

G. M. KNEBEL, executive in the production department of Standard Oil Co. of New Jersey, has returned to New York from a trip to San Domingo, Trinidad, and Venezuela.

MAX POWELL WATSON, engineer with United Gas Pipe Line Co., Shreveport, La., has been promoted to assistant district engineer, South west Louisiana.

WILL A. MORGAN, who joined Continental Oil Co., Ponca City, Okla., in 1933, as clerk in the advertising division, has been appointed advertising manager of the company. At the time of his promotion he was assistant to the advertising manager.

PAUL GROSE has been appointed advertising manager of the Ohio Oil Co., Findlay, Ohio, with offices in Findlay.

MAURICE CHURCHWELL, formerly with the Bureau of Reclamation at Casper, Wyo., has joined the engineering staff of Ohio Oil Co. at Casper.

F. W. ROBSON, oil engineer, has moved to Wichita, Kans., to become assistant engineer of the pipe-line division of Socony-Vacuum Oil Co there.

J. HOWARD PEW, president, Sun Oil Co., will present "a working model visualizing the operations of petroleum production and refining" to Franklin Institute at Philadelphia, Pa., May 8.

LEE ELLZEY, district superintendent in the Holliday district for the Humble Oil & Refining Co., has been transferred to the Livingston district as district superintendent. Mr. Ellzey was replaced by W. H. GREER.

C. HARRY KEPLINGER, for the past 4 years production engineer for Shell Oil Co., Inc., in the Kansas district, has been transferred to the Oklahoma district. He has already left Wichita to assume the duties of his new position.

O. W. JONES, well acquainted in petroleum circles, has become head of the commercial and industrial power department of Central Power & Light Co., Corpus Christi, Tex. He is a past president of the Petroleum Electric Power Association.

W. MORTIMER SMITH, secretary of the Landreth Production Corp., Fort Worth, Tex., who underwent a major operation last December in Los Angeles while visiting there, has returned to his home in Fort Worth and plans to be back at his desk in a short while.

# Started at Bottom

Paul W. Brower has recently become a member of the Housh & Thompson companies, headquartering in Houston, Tex., as manager of the drilling and producing departments. Mr. Brower is not entirely a newcomer to Houston, having been in that city while a member of Humble Oil & Refining, and Vacuum Oil companies. He has had more than 20 years of experience in oil-well drilling and producing in the Southwest.

*PAUL W. BROWER*

Like many other oil men, he started as tool dresser on a cable-tool rig for the old Prairie Oil & Gas Co. in Ranger, Tex., later becoming a driller. With 3 years of cable-tool drilling behind him, he joined Humble in the Orange field to acquire experience in rotary-type drilling. Beginning as a roughneck, he rose to become a driller, and later to superintend operations in many fields along the Gulf Coast. In 1927, he left Humble to become assistant manager of drilling and production for Vacuum Oil Co., operating out of Houston. Later, when Vacuum merged with Magnolia Petroleum Co., Mr. Brower continued with the parent company as assistant superintendent of production in East Texas.

Mr. Brower's experience reads like a chronological record of the oil business, having taken him through Ranger, Sour Lake, Hull, Orange, Hobbs, and numerous other fields and points that are landmarks.

Mr. Brower will be joined by Mrs. Brower and their two children later in the year. They look forward to renewing many of their old friendships, and for the benefit of his former pitch-playing cronies, Mr. Brower advises that it will be a lot tougher to talk him out of "low" than it used to be.

NORMAN GARLAND, formerly active in the Oklahoma, Kentucky and Illinois fields, is representing Toronto interests in the Vermilion field in East Central Alberta, Canada.

HARVEY WILET HEMINGWAY, lubricating engineer at the Kendall refinery at Bradford, Pa., will leave Bradford for a year's army training May 15.

W. D. LATHAM, assistant district superintendent in the Navarro Crossing district for Humble Oil & Refining Co., has been transferred to the Gladewater, Tex., district.

CHARLES R. HOLLAND, formerly stationed at Fort Worth, Tex., in Ohio Oil Co.'s legal department, has been transferred to the legal department of Mountain Fuel Supply Co., Ohio affiliate, at Rock Springs, Wyo.

W. G. SELBY, vice president of Selby Oil & Gas Co., Tulsa, passed through Tulsa on his way from Sarasota, Fla., where he spends his winters, to Ennis, Mont., where he spends his summers.

A. J. SHAW, junior petroleum engineer in the West Texas division offices for the Humble Oil & Refining Co., has been promoted to district engineer and transferred to the Hurdle district.

T. W. SUTHERLAND, for 23 years superintendent of production for Lone Star Gas Co., Dallas, Tex., terminated his service with the company May 1, by retirement, according to an announcement by E. F. SCHMIDT, vice president and operating manager.

R. C. McKEE, assistant advertising manager, Standard Oil Co., has been ordered to active duty as a lieutenant, junior grade, in the Navy, effective May 5. After a brief preparatory period at Great Lakes Naval Training Station, he will be assigned as a public-relations officer.

Shifts: J. R. BUCK, engineer, Texas Co., from New Orleans, La., to Pascagoula, Miss.; R. H. WEAVER, engineer, Sun Oil Co., from Shamrock, Fla., to Tampa, Fla.; R. G. MORRISON, Shamrock Oil & Gas Corp., from Pinehurst, N. C., to Spring Lake, N. J.; B. B. WESTCOTT, engineer, Gulf Research & Development Co., from Oakmont, Pa., to Wilkinsburg, Pa.; HALLY H. HAVELY, engineer, Stanolind Pipe Line Co., from Elmont, Kans., to Topeka, Kans.; E. F. BERRYMAN, engineer, Stanolind Oil & Gas Co., from Boise City, Okla., to Plainview, Tex.; D. L. SCOTT, geologist, Gulf Research & Development Co., from Columbus, Tex., to New Iberia, La.; CHARLES C. GRIMES, engineer, Standard Oil Co. of Texas from Houston, Tex., to Midland, Tex.; A. R. MATTHEWS, president, Matford Oil Co., from Jackson, Miss., to Fort Worth, Tex.; HUGH W. CRAWFORD, engineer, Phillips Petroleum Co., from Bartlesville, Okla., to Kansas City, Kans.; WARREN H. WYNN, geologist, Sinclair Prairie Oil Co., from Tulsa, Okla., to Bismarck, N. D.; STANLEY S. SIEGFUS, geologist, Socony-Vacuum Oil Co., from Caracas, Venezuela, South America, to Bakersfield, Calif.; EDGAR JACKSON, Lago Oil Transport Co., from Aruba, Netherlands West Indies, to East Chicago, Ind.

A. L. BRODERICK, of Broderick & Calvert, Fort Worth, Tex., independent operators in West Texas, has returned to his desk after spending the winter with Mrs. Broderick in Florida.

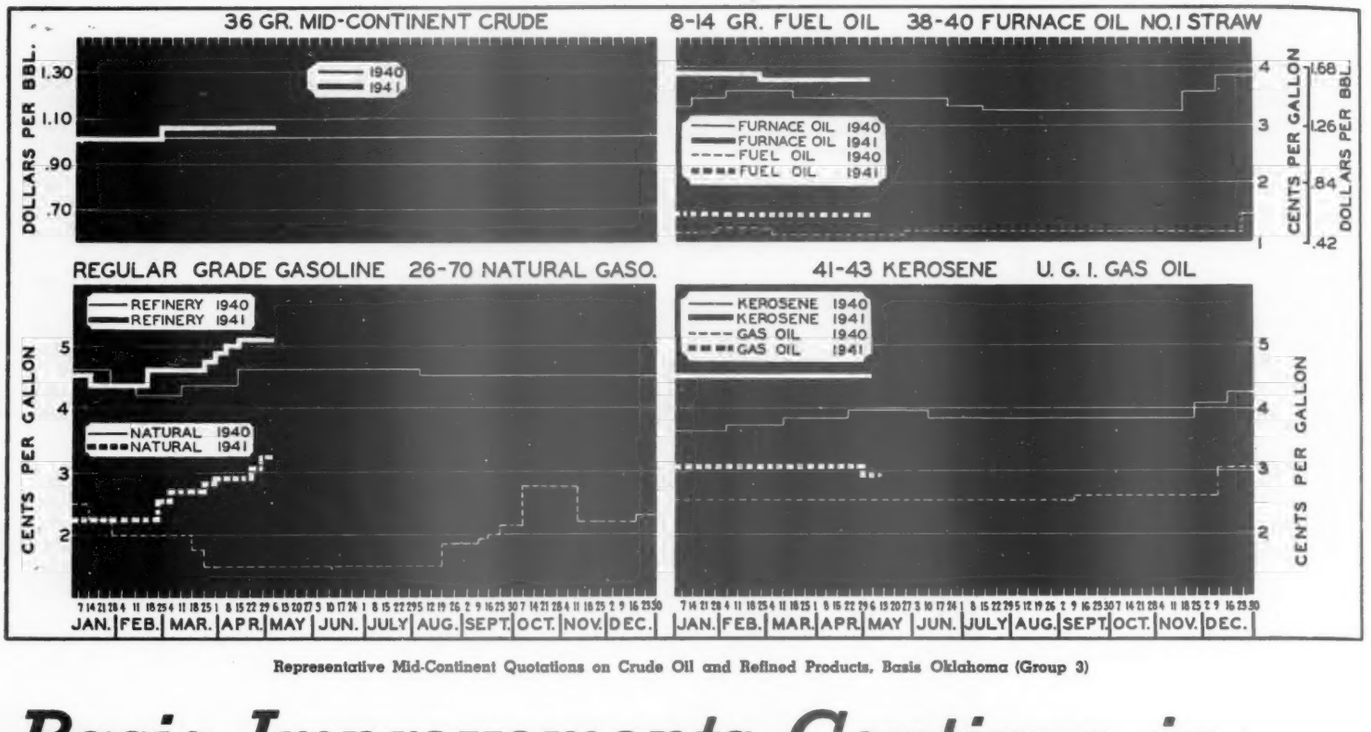
HUGO T. ZAREMBA, general rate supervisor of the Standard Oil Co. of Indiana, will retire on company annuity on May 23, after almost 34 years of service in the traffic department.

R. L. MARSTON is a new member of the executive department of Sun Oil Co. in its Dallas, Tex., headquarters. He has been named assistant general production superintendent. He was transferred from McAllen, Tex., where he has been superintendent for the firm's Rio Grande Valley district. He joined Sun in 1920, and has seen service in Venezuela, California and Washington.

RICHARD L. SACHSE, director of natural resources and a member of the California Unemployment Commission, has been appointed a member of the state Railroad Commission by Governor Olson, succeeding R. C. WAKEFIELD, recently appointed to the Federal Communications Commission by President Roosevelt.

A. E. HERRMANN, Amarillo, Tex., was elected president of the Panhandle Producers and Royalty Owners Association at a recent meeting held in Amarillo, Tex. He succeeds MEL DAVIS, Pampa. WILL O'BRIEN, Amarillo; GORDON BURCH, Borger; and GEORGE CREE, Pampa, are vice presidents of the association.

R. C. MALLERY, of Dominguez Oilfields, Ltd., was chairman of the last monthly meeting of the Los Angeles Petroleum Accounts Society of which W. A. RUSSELL of Seaboard Oil Co. is president, and had as his guest JOHN F. DODGE, who spoke on "New Factors Influencing the Production and Utilization of Natural Gas in California."




**Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)**

# *Basic Improvements Continue in Mid-Continent Refinery Market*

By H. STANLEY NORMAN

TONE of the Mid-Continent refinery-gasoline market this week grew sharper although quotations remain unchanged at the general level of 5.25 cents per gallon for regular-specification material. Basic conditions in the refinery-gasoline market appear to be improving and gaining strength at a rate more rapid than quotations indicate. This apparent anomaly in response of prices to other aspects of the refinery market traces back to the middle of the winter when considerable material was available for less than quotations at that time. Part of the force of the market since March has been spent in picking up the slack allowed to accumulate over the winter months.

Aside from the favorable factors apparent in the motor-fuel market other optimistic signs prevail in the Mid-Continent district. Advances of 0.5 cent per gallon on neutrals and 1 cent per gallon on bright-stock lubricating oils were announced May 1 to tank-car customers. The May 1 advance on Mid-Continent lubricating oils was the second to develop since consumption turned up sharply in March. Another factor in movement of Mid-Continent lubricants is the series of advances made during the past 60 days in the Pennsylvania district. Higher crude costs and an advance in industrial consumption have been other factors bearing on the two lubricating-oil advances.

### Low-Octane Fuel Sought

Low-octane gasoline is currently one of the strongest products in the Mid-Continent refinery market. Demand is particularly strong for material that ranges from 60 to 65 octane. Shipments are heavy to agricultural districts where tractor operators are continuing to favor fuels in the gasoline range in preference to the less volatile distillate fuels. Operators of trucks and tractors in the construction of defense cantonments and factories is probably another factor exerting strong influence on the demand for low-octane gasoline.

Manufacturers of natural gasoline in the Oklahoma (Group 3) territory have lifted their tank-car quotations another fraction to 3.25 cents per gallon. There is no abate nent in demand for natural and most suppliers are combing the market intensively for additional material. Butane and propane are particularly hard to find for either prompt or deferred shipment and the demand is especially acute for these products. Butane is being used to an increasing extent in factories producing a variety of goods. In some cases butane is being used to drive engines in generating electricity, a service to which the fuel is particularly adaptable.

Mid-Continent buyers are scouring the market in Arkansas, North Texas, Louisiana, Kansas, Oklahoma and Illinois seeking new sources of supply but success is strictly limited to a few small quantities. There is practically no butane or propane available for spot-market trading. Most manufacturers arranged to dispose of any anticipated surplus production of butane and propane to refiners equipped with alkylation plants. Most of the butane-propane contracts are written on a long-term basis and have from a few to several months before expiration will permit sellers to take advantage of higher spot offerings.

### March Shipments High

Basis for the improvement in Mid-Continent lubricating-oil prices is found in the record of March operations which indicates the swing to liquidation of stocks. Production of viscous neutrals showed the largest gain and also showed the highest volume in shipments. Recovery of viscous neutrals in March totaled 243,637 bbl. and shipments were reported at 245,653 bbl. March shipments were up 58,186 bbl. from February loadings while production increased 61,124 bbl. Shipments of other grades of Mid-Continent lubricating oils in March were: Bright stock, 227,539 bbl.; paraffin oils, 80,946 bbl.; steam refined, 16,266 and blended oils, 279,585 bbl. February shipments of the same products were: Bright stock, 187,223 bbl.; paraffin oils, 67,215; steam refined, 14,953 and blended oils, 187,086 bbl.

All grades of gasoline are hard to locate. Shippers are unable to obtain usual amounts of gasoline from refiners with whom they have been doing business for years. The gasoline is just not available, over and above plant commitments.

### Refined Oil Market Barometer

Sellers continue in charge of the motor-fuel markets in practically all territory east of the Rocky Mountains. Buyers are seeking additional gasoline in all refining districts without success. Refiners are unable to determine just what portion of the current demand is based on a projection of the increases experienced so far this year, but they are not concerned.

**MID-CONTINENT:** Lubricating oils raised 0.5 to 1 cent per gallon.

**GULF COAST:** Gasoline firm. Distillate fuel softening.

**CALIFORNIA:** Fuel oils advanced 10 cents per barrel.

**PENNSYLVANIA:** Gasoline, neutrals and bright stocks tight.

**CHICAGO:** Gasoline market tone gaining strength. Fuels strong.

# Diversion of 50 Tankers Threat To Eastern Coast Oil Supplies

By J. P. O'DONNELL

NEW YORK, May 6.—The major development in the East Coast market last week was the announcement that the Maritime Commission would divert 50 United States flag tankers to the service of Great Britain, 25 of which are to be available to the British within the next few days. What effect this action will have on East Coast markets is problematical, but it is apparent that current tanker demand is the heaviest, seasonally, in the history of the industry and some observers are of the opinion that unless these tankers are returned to domestic service by late summer at the latest the problem of East Coast supply will be critical.

A number of tankers have been used in the service for which the 50 are designated, shuttling crude oil and refined products from Venezuela, Trinidad, Curacao, Aruba and the United States Gulf Coast to North Atlantic ports. However, the number has not been in excess of 10, it is believed, so that the effect has not been felt seriously.

Tanker rates have not been affected by the diversion proposal and probably will not be affected. Immediately after the first few tankers were chartered for British service in Western Hemisphere waters, coastwise-tanker rates stiffened but have since remained unchanged at from 50 to 57 cents, dependent on the nature of the refined product or the gravity of the crude oil. The tanker situation remains tight and none are available for immediate charter, according to reports.

Normally, summer is the dull tanker season and even last year when a record demand was experienced in the East Coast market a number of bottoms were idle. Even a further increase in demand this year was not expected to require the use of all tankers throughout the summer, so that it is possible to release a number for British service without immediate harmful results. However, demand for coastwise tankers normally becomes heavy in early September and if sufficient tonnage is not available then, the problem of supplying the East Coast will be serious. It is believed that an adequate domestic supply will be the primary consideration of the Maritime Commission. Steps also may be taken to hold demand for heating oil at as low a figure as possible. Rumors are current that additional heating-oil installations will be prohibited.

Shifting of the principal British source of supply to the Western Hemisphere was dictated by requirements. Loss of tankers and slowness of convoys have forced virtual abandonment of the 11,290-mile route from Abadan, Iran, to London in favor of the 2,800-mile route from Halifax and the 3,343-mile route from New York. Tankers in the shuttle service will transport the oil from the Netherlands West Indian islands of Aruba and Curacao to New York, 1,769 miles, and from Houston to New York, 1,898 miles, and to Halifax, 538 miles further, for transshipment to British flag vessels.

With British demand shifting to the Western Hemisphere, United States exports are expected to benefit to some degree though it is certain that as much of the British requirements will be met outside this country as possible as a matter of exchange conservation. Exports to Great Britain in March were low. Lubricating oils alone held up to former levels. More than 100,000 bbl. of aviation gasoline were shipped to the Netherlands West Indies in that month, however, and it is probable that the bulk of this was reexported to the United Kingdom. It included more than 47,000 bbl. of antiknock compounds and 60,000 bbl. of "high-grade" gasoline.

Prospects of sustained long-season rates indicate that the tanker-charter factor will be stable throughout the summer. Last year, tanker rates fell to as low as 17 cents for Gulf to North-of-Hatteras shipments and refined prices declined accordingly. Because of the indicated 1 cent per gallon increase in rates, prices should be accordingly higher this year. Regardless of the tightness of the situation, excessively high prices are not anticipated since the office of price administration is reportedly already studying the oil situation.

Gasoline prices were generally unchanged throughout the northeastern area last week though prospects of another half-cent raise in tank-car quotations were considered good. The strong position of the gasoline market is reflected in the declining level of stocks which are now down to 20,177,000 bbl. in the East Coast area, a reduction of almost 1,250,000 bbl. in the last week of April. Motor fuel of a minimum 72 octane is quoted at 7 cents in tank cars in the New York Harbor area with minimum 80-octane gasoline a half to a full cent higher.

Ranking next to gasoline among the major products are heavy fuel oil and diesel oil. Declining coal supplies as a result of strike are reported to have induced a number of plants equipped to consume both coal and oil to switch to the latter fuel. The spot-market price for both products was unchanged last week but Bunker C fuel oil at $1.35 per barrel and diesel oil at $1.95 per barrel were both strong and increases are expected.

## Tanker Uncertainties Concern Gulf Refiners

HOUSTON, Tex., May 6.—Increasing uncertainty was reflected in Gulf Coast refinery markets the past week as a result of the scarcity of tankers. Although prices on major projects continued strong, movement of material is being greatly restricted, discouraging any important new buying, and it is believed by some that slight setbacks in the upward price trends might be expected shortly pending adjustments in the tanker situation. Inability to move material is causing some backing up of refined products on the Gulf Coast, and with the removal of additional tankers from Gulf Coast service, sellers are becoming concerned.

Despite the general inactivity in trading and lack of demand, there still is no indication of any slipping of prices, except for gas oils and kerosenes. High-octane gasolines continued to be quoted at a minimum of 5¾ cents with other grades holding their relative price levels.

Heavy fuels of Bunker C grades gave evidence of tightening as sellers attempted to ante quotations from 85 to 90 cents. This was in face of slack demand. Although several sources still are quoting 85 cents, the majority of sellers are asking from 87 to 90 cents. Bunker C fuel in ships bunkers is unchanged at 85 cents.

No. 2 fuel is unsteady following natural trends for this time of year, and sellers generally have dropped their quotations to a range of 3⅛ to 3¼ cents. Previously the price was firm at 3¼ cents. Some offerings for future delivery were reported at 3 cents although there was no verification of any actual sales at that figure.

Kerosene is unchanged in price although the tendency is downward.

## *A.P.I. Weekly Refinery Statistics*

**Week Ended May 3, 1941**

| | Capacity reporting (per cent) | Total gasoline stocks (bbl.) | Residual fuel-oil stocks (bbl.) | Gas oil and distillate stocks (bbl.) | Daily crude runs (bbl.) |
|---|---|---|---|---|---|
| East Coast | 100.0 | 20,787,000 | 8,717,000 | 8,004,000 | 611,000 |
| Appalachian | 91.0 | 3,151,000 | 489,000 | 361,000 | 134,000 |
| Ind., Ill., and Ky. | 90.2 | 18,408,000 | 3,258,000 | 2,552,000 | 594,000 |
| Okla., Kans., and Mo. | 76.9 | 8,399,000 | 1,968,000 | 1,270,000 | 273,000 |
| Inland Texas | 59.6 | 2,217,000 | 1,354,000 | 343,000 | 106,000 |
| Texas Gulf | 89.2 | 14,978,000 | 6,032,000 | 5,462,000 | 921,000 |
| Louisiana Gulf | 97.6 | 3,445,000 | 2,151,000 | 1,127,000 | 125,000 |
| N. Louisiana and Ark. | 51.5 | 597,000 | 588,000 | 294,000 | 49,000 |
| Rocky Mountains | 56.0 | 1,734,000 | 499,000 | 147,000 | 51,000 |
| California | 87.3 | 15,672,000 | 67,763,000 | 10,189,000 | 536,000 |
| Total reported | 86.2 | 89,588,000 | 92,819,000 | 29,749,000 | 3,400,000 |
| Est. unreported | ..... | 6,740,000 | 1,595,000 | 560,000 | 335,000 |
| *Est. total | ..... | †96,328,000 | 94,414,000 | 30,309,000 | 3,735,000 |
| *Est. total previous wk. | ..... | 96,647,000 | 94,732,000 | 29,543,000 | 3,675,000 |
| *May 4, 1940 | ..... | 103,301,000 | 102,511,000 | 25,395,000 | 3,505,000 |

*Bureau of Mines. †Includes 7,091,000 bbl. aviation gasoline.

## Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATE)

| | |
|---|---|
| Week ended April 26, 1941 | 266,149,000 barrels |
| Week ended April 19, 1941 | 265,471,000 barrels |
| Week ended April 27, 1940 | 256,670,000 barrels |

Figures do not include stocks of heavy, unrefinable California crude.

# RETAIL OIL MARKETS...

**Tank-wagon and filling-station prices on gasoline and kerosene furnished by larger marketing firms**

Prices as of May 6, 1941

### Taxes

The gasoline quotations given in the following tables include the 1½-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

### Standard Oil Co. (Indiana)

| | Gasoline Tank wag. | Dlr. | Inc. tax | Kero. tank wag. |
|---|---|---|---|---|
| Chicago, Ill. | 15.1 | 13.1 | 4.5 | 10.0 |
| Decatur | 15.1 | 13.6 | 4.5 | 8.5 |
| Joliet | 16.1 | 14.6 | 4.5 | 10.0 |
| Peoria | 16.1 | 13.7 | 4.5 | 10.0 |
| Quincy | 15.9 | 14.4 | 4.5 | 9.8 |
| Davenport, Ia. | 16.1 | 14.6 | 4.5 | 10.0 |
| Des Moines | 15.9 | 14.4 | 4.5 | 9.8 |
| Mason City | 16.3 | 14.8 | 4.5 | 10.2 |
| Duluth, Minn. | 17.9 | 16.4 | 5.5 | 10.8 |
| Mankato | 17.5 | 16.0 | 5.5 | 9.9 |
| Minneapolis | 17.5 | 15.0 | 5.5 | 10.4 |
| LaCrosse, Wis. | 17.5 | 16.0 | 5.5 | 10.4 |
| Green Bay | 17.9 | 16.4 | 5.5 | 10.8 |
| Milwaukee | 17.3 | 15.8 | 5.5 | 10.2 |
| Detroit, Mich. | 15.1 | 13.6 | 4.5 | 9.1 |
| Grand Rapids | 15.4 | 13.9 | 4.5 | 9.1 |
| Saginaw | 15.4 | 13.9 | 4.5 | 9.1 |
| Evansville, Ind. | 17.1 | 14.9 | 5.5 | 9.8 |
| Indianapolis | 17.3 | 15.3 | 5.5 | 10.0 |
| South Bend | 17.3 | 15.8 | 5.5 | 10.0 |
| Fargo, N. D. | 18.7 | 17.2 | 5.5 | 11.6 |
| Huron, S. D. | 18.0 | 16.5 | 5.5 | 10.9 |
| Kansas City, Mo. | 15.4 | 12.4 | 4.5 | 8.6 |
| St. Louis* | 15.2 | 13.7 | 4.5 | 9.6 |
| St. Joseph | 15.4 | 13.5 | 4.5 | 8.4 |
| Wichita, Kans. | 14.3 | 12.8 | 4.5 | 7.2 |

*State tax 2 cents, 1-cent city tax, and 1½-cent federal tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers. On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off, minimum delivery 25 gal.

### Stanolex Fuel Oil in Chicago

Effective Apr. 19, 1941, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 8.75 cents; 100-149 gal., 7.75 cents; 150 gal. and over, 7.25 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7.25 cents; 400 gal. and over, 6.75 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7.25 cents; 400 gal. and over, 6.75 cents. Stanolex fuel oil A, 1-99 gal., 7.5 cents; 100-399 gal., 6.5 cents; 400-749 gal., 5.5 cents; 750 gal. and over, 4.75 cents. Stanolex fuel oil B, 1-99 gal., 7.5 cents; 100-399 gal., 6.5 cents; 400-749 gal., 5.5 cents; 750 gal. and over, 4.75 cents. Stanolex Bunker C fuel oil, 1-399 gal., 6.0 cents; 400-999 gal., 5.0 cents; 1,000 gal. and over, 4.0 cents.

### Ohio

STANDARD OIL CO. OF OHIO

| | Gasoline Cons'r tank wag. | Dlr. Di-vided dlr. | Inc. tax | Kero. tank wag. |
|---|---|---|---|---|
| Ohio points | 16.0 | 15.0 | 5.5 | *9.0 |

*Includes state tax of 1 cent.

### Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

| | Gasoline Cons'r tank car | Dlr. tank wag. | Inc. tax | Kero. tank wag. |
|---|---|---|---|---|
| Atlantic City | 12.40 | 13.40 | 4.5 | 7.8 |
| Newark | 12.40 | 13.40 | 4.5 | 7.8 |
| Annapolis, Md. | 13.35 | 14.85 | 5.5 | 9.5 |
| Baltimore | 12.75 | 14.25 | 5.5 | 8.0 |
| Cumberland | 14.15 | 15.65 | 5.5 | 10.0 |
| Washington, D. C. | 11.00 | 12.5 | 3.5 | 9.0 |
| Danville, Va. | 14.45 | 16.95 | 6.5 | 9.75 |
| Norfolk | 13.25 | 15.75 | 6.5 | 9.5 |
| Petersburg | 13.55 | 16.05 | 6.5 | 10.5 |
| Richmond | 13.55 | 16.05 | 6.5 | 10.5 |
| Roanoke | 14.75 | 17.25 | 6.5 | 10.0 |
| Charles'n, W. Va. | 14.55 | 17.05 | 6.5 | 11.5 |
| Parkersburg | 13.85 | 16.35 | 6.5 | 11.2 |
| Wheeling | 14.85 | 16.40 | 6.5 | 11.8 |
| Charlotte, N. C. | 16.80 | 17.50 | 7.5 | 10.1 |
| Hickory | 17.35 | 18.85 | 7.5 | 10.0 |
| Mt. Airy | 17.20 | 17.40 | 7.5 | 10.7 |
| Raleigh | 16.55 | 18.05 | 7.0 | 10.0 |
| Salisbury | 16.85 | 16.90 | 7.5 | 10.4 |
| Charleston, S. C. | 14.65 | 17.15 | 7.5 | 9.25 |
| Columbia | 15.50 | 18.00 | 7.5 | (*) |
| Spartanburg | 16.20 | 18.70 | 7.5 | (*) |

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at a time by hose connection, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery: 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

*Kerosene business of the company at these points now exclusively handled by dealers.

### Southern District

STANDARD OIL CO. (KENTUCKY)

| | Gasoline Cons'r tank wag. | Net dlr. | Inc. tax | Kero. tank wag. |
|---|---|---|---|---|
| Atlanta, Ga. | 16.5 | 16.5 | 7.5 | 10.0 |
| Augusta | 17.0 | 17.0 | 7.5 | 9.5 |
| Macon | 16.5 | 16.5 | 7.5 | 9.0 |
| Savannah | 16.0 | 16.0 | 7.5 | 9.0 |
| Birmingham, Ala. | 17.0 | 17.0 | 8.5 | 8.0 |
| Mobile | 17.5 | 17.5 | 9.5 | 8.0 |
| Montgomery | 18.5 | 18.5 | 9.5 | 10.0 |
| Jackson, Miss. | 16.5 | 16.5 | 7.5 | 9.0 |
| Vicksburg | 16.0 | 16.0 | 7.5 | 8.5 |
| Jacksonville, Fla. | 17.0 | 17.0 | 8.5 | 8.0 |
| Miami | 17.0 | 17.0 | 8.5 | 8.0 |
| Pensacola | 17.5 | 17.5 | 9.5 | 8.0 |
| Tampa | 17.0 | 17.0 | 8.5 | 8.0 |
| Lexington, Ky. | 16.0 | 16.0 | 6.5 | 9.0 |
| Covington | 14.0 | 14.0 | 6.5 | 9.0 |
| Louisville | 15.5 | 15.5 | 6.5 | 8.5 |
| Paducah | 16.0 | 16.0 | 6.5 | 8.5 |

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax, and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

### Pennsylvania and Delaware

ATLANTIC REFINING CO.

| | Gasoline Cons'r tank car | Dlr. tank wag. | Inc. tax | Kero. tank wag. |
|---|---|---|---|---|
| Philadelphia, Pa. | 13.0 | 14.0 | 5.5 | 9.5 |
| Pittsburgh | 13.5 | 15.0 | 5.5 | 10.5 |
| Allentown | 13.5 | 15.0 | 5.5 | 10.5 |
| Erie | 12.5 | 15.0 | 5.5 | 10.0 |
| Scranton | 13.5 | 15.0 | 5.5 | 10.5 |
| Altoona | 13.5 | 15.0 | 5.5 | 10.5 |
| Dover, Dela. | ... | 14.5 | 5.5 | 10.5 |
| Wilmington | ... | 14.0 | 5.5 | 10.0 |

Price basis to undivided dealers, dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

### Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

| | Gasoline Tank truck | Serv. sta. | Inc. tax | Kero. tank wag. |
|---|---|---|---|---|
| San Francisco | 17.0 | 18.0 | 4.5 | 11.5 |
| Los Angeles | 16.5 | 17.5 | 4.5 | 10.0 |
| Fresno, Calif. | 18.0 | 19.0 | 4.5 | 12.5 |
| Phoenix, Ariz. | 21.0 | 22.0 | 6.5 | *17.5 |
| Reno, Nev. | 20.0 | 21.0 | 5.5 | 13.5 |
| Portland, Ore. | 19.5 | 20.5 | 6.5 | 13.5 |
| Seattle, Wash. | 19.5 | 20.5 | 6.5 | 13.5 |
| Spokane | 21.0 | 22.0 | 6.5 | 16.5 |
| Tacoma | 19.5 | 20.5 | 6.5 | 13.5 |

*Includes 5-cent state tax.

Discount to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents. To commercial consumers: On tank-wagon price; on single deliveries of 40 gal. and over, advance quantity discount extended at time of delivery, 3 cents. Service-station schedule applies on single deliveries less than 40 gal. On kerosene in tank-car, transport-truck, and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank wagon.

March 18, 1939, split dealer discount was canceled.

### New York and New England

SOCONY-VACUUM OIL CO., INC.

| | Gasoline Cons'r tank car | Dlr.* tank wag. | Inc. tax | Kero. tank wag. |
|---|---|---|---|---|
| Albany | 13.9 | 13.7 | 5.5 | 7.6 |
| Met. New York | 13.4 | 13.7 | 5.5 | 7.9 |
| Buffalo | 13.5 | 13.7 | 5.5 | 8.0 |
| Rochester | 14.2 | 14.4 | 5.5 | 8.6 |
| Syracuse | 14.0 | 14.2 | 5.5 | 8.5 |
| Portland, Me. | 13.8 | 14.5 | 5.5 | 8.0 |
| Manchester, N. H. | 14.6 | 14.5 | 5.5 | 8.9 |
| Burlington, Vt. | 14.9 | 15.1 | 5.5 | 8.2 |
| Boston, Mass. | 12.4 | 12.7 | 4.5 | 7.9 |
| Worcester | 13.4 | 13.3 | 4.5 | 8.0 |
| Hartford, Conn. | 13.3 | 13.5 | 4.5 | 7.4 |
| New Haven | 13.0 | 13.2 | 4.5 | 6.8 |
| Providence, R. I. | 12.4 | 13.2 | 4.5 | 7.7 |

*Undivided.

Effective August 8, 1940, the company changed its commercial consumer policy in New York and New England to the following:

Full compartment deliveries: Accounts buying less than 20,000 gal. annually, 0.5 cent above the commercial-consumer price; accounts buying from 20,000 to 120,000 gal. annually, commercial-consumer price; accounts buying 120,000 gal. annually and above, 0.25 cent off consumer price. Split compartment deliveries: Delivery of less than a full compartment, 250 gal., commercial-consumer price plus 1 cent. Steel-barrel deliveries: Commercial price plus 3 cents.

### Rocky Mountain District

CONTINENTAL OIL CO.

| | Gasoline Tank wag. | Inc. tax | Kero. tank wag. |
|---|---|---|---|
| Denver, Colo. | 14.0 | 5.5 | 10.5 |
| Grand Junction | 17.5 | 5.5 | 12.0 |
| Pueblo | 14.0 | 5.5 | 9.0 |
| Casper, Wyo. | 16.5 | 5.5 | 11.5 |
| Cheyenne | 15.5 | 5.5 | 11.0 |
| Billings, Mont. | 17.5 | 6.5 | 12.0 |
| Butte | 16.5 | 6.5 | 13.0 |
| Great Falls | 16.5 | 6.5 | 12.0 |
| Helena | 16.5 | 6.5 | 12.5 |
| Salt Lake, Utah | 17.0 | 5.5 | 14.0 |
| Boise, Idaho | †19.6 | 6.5 | 16.0 |
| Twin Falls | †20.6 | 6.5 | 16.5 |
| Albuquerque, N. M. | *17.0 | 7.0 | 9.5 |
| Roswell | *15.0 | 7.0 | 8.0 |
| Santa Fe | ‡17.5 | 7.5 | 9.5 |

*Includes city tax of 0.5 cent. †Includes toll-bridge tax of 1 mill. ‡Includes city tax of 1 cent.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

### Central South District

STANDARD OIL CO. OF LOUISIANA

| | Gasoline Cons'r tank car | Dlr. tank wag. | Incl. tax | Kero. tank wag. |
|---|---|---|---|---|
| New Orleans, La. | 15.25 | 17.25 | 8.5 | ‡10.0 |
| Baton Rouge | 15.25 | 17.25 | 8.5 | ‡10.5 |
| Alexandria | 15.25 | 17.25 | 8.5 | ‡10.5 |
| Lafayette | 15.50 | 18.00 | 8.5 | ‡10.0 |
| Lake Charles | 15.50 | 18.00 | 8.5 | ‡10.0 |
| Shreveport | 14.50 | 17.00 | 8.5 | 10.0 |
| Knoxville, Tenn. | 18.00 | 20.50 | 8.5 | 12.5 |
| Memphis | 15.50 | 18.00 | 8.5 | 10.5 |
| Chattanooga | 17.50 | 18.50 | 8.5 | 12.0 |
| Nashville | 17.00 | 18.75 | 8.5 | 10.0 |
| Bristol | 18.25 | 18.25 | 8.5 | 12.0 |

Essolene at dealer price less 0.5 cent per gallon to undivided dealers.

‡Includes 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gal. or more in one territory take posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gal. at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less 0.5 cent per gallon. Kerosene prices include 1-cent state tax.

Effective February 24, 1939, the company reestablished in New Orleans the commercial consumer policy on motor fuel effective in the rest of the state.

Effective December 12, 1938, the company revised its commercial consumer policy on motor fuel in New Orleans, as follows: Single deliveries of less than 50 gal., consumer tank car plus 2 cents per gallon 50 to 199 gal., consumer tank car plus 1 cent per gallon; 200 gal. and over, consumer tank car plus 0.5 cent per gallon.

### Oklahoma and Arkansas

CONTINENTAL OIL CO.

| | Gasoline Tank wag. | Incl. tax | Kero. tank wag. |
|---|---|---|---|
| Texarkana, Ark. | 13.5 | 5.5 | 6.0 |
| Fort Smith | 13.5 | 5.5 | 6.5 |
| Little Rock | 16.75 | 8.0 | 8.0 |
| Muskogee, Okla. | 13.00 | 5.5 | 7.0 |
| Oklahoma City | 12.50 | 5.5 | 7.0 |
| Tulsa | 12.50 | 5.5 | 7.0 |

Tank wagon represents price to consumers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

### Nebraska

STANDARD OIL CO. OF NEBRASKA

| | Gasoline Tank wag. | Dlr. | Incl. tax | Kero. tank wag. |
|---|---|---|---|---|
| Omaha | 17.9 | 16.4 | 6.5 | 9.8 |
| McCook | 17.5 | 14.9 | 6.5 | 8.5 |
| Norfolk | 18.0 | 16.4 | 6.5 | 9.9 |
| North Platte | 18.3 | 16.5 | 6.5 | 10.2 |
| Scottsbluff | 17.4 | 15.5 | 6.5 | 9.5 |

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

### Texas

| | Gasoline Tank wag. | Serv. sta. | Incl. tax | Kero. tank wag. |
|---|---|---|---|---|
| Dallas, Tex. | 11.5 | 15.5 | 5.5 | 6.0 |
| Fort Worth | 11.5 | 15.5 | 5.5 | 7.0 |
| Houston | 12.0 | 16.0 | 5.5 | 8.0 |
| San Antonio | 12.5 | 17.0 | 5.5 | 8.0 |

### Naphtha

STANDARD OIL CO. (INDIANA)

| | Tank wagon* |
|---|---|
| Oleum spirits | 16.2 |
| V.M.&P. naphtha | 16.5 |
| Cleaners' naphtha | 15.5 |
| Stanisol | 15.5 |

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

### Canada*

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

| | Gasoline Tank wag. | Incl. tax | Kero. tank wag. |
|---|---|---|---|
| Halifax, N. S. | 24.5 | 10.0 | 18.0 |
| St. John, N. B. | 24.5 | 10.0 | 18.0 |
| Montreal, Que. | 24.0 | 8.0 | 16.5 |
| Toronto, Ont. | 24.5 | 8.0 | 17.0 |
| Hamilton, Ont. | 24.5 | 8.0 | 17.0 |
| Winnipeg, Man. | 27.5 | 7.0 | 22.5 |
| Brandon, Man. | 28.0 | 7.0 | 22.5 |
| Regina, Sask. | 25.0 | 7.0 | 20.0 |
| Saskatoon, Sask. | 20.8 | 7.0 | 22.8 |
| Edmonton, Alta. | 25.9 | 7.0 | 20.0 |
| Calgary, Alta. | 23.0 | 7.0 | 18.0 |
| Vancouver, B. C. | 21.0 | 7.0 | 23.0 |

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon prices. Discount to undivided dealers, 1 cent below tank-wagon price. In Maritime Provinces both divided and undivided dealers pay tank-wagon price.

## Tank-Wagon Changes

Standard Oil Co. (Indiana) advanced gasoline 1 cent per gallon to all classes of trade in Minnesota May 1 to adjust for an increase of the tax rate by that amount. The company raised kerosene tank-wagon prices 1 cent May 5 at Detroit, Mich.

Standard Oil Co. of Kentucky reduced the tank-wagon price of regular gasoline 0.5 cent per gallon April 17 at Atlanta and on April 29 at Macon, Ga.

Standard Oil Co. of Louisiana advanced the consumer tank-car and dealer tank-wagon price of gasoline April 25 by amounts ranging from 0.5 cent to 1.25 cents per gallon at most points in Tennessee. The company advanced tank-car and tank-wagon prices at New Orleans, 1 cent April 25, and 0.75 cent per gallon at Lake Charles, La. The April 24 advance was 1 cent at Memphis, 1.15 cents at Chattanooga, and 1.25 cents at Nashville, Tenn.

Standard of New Jersey advanced

*(Continued on Page 127)*

# PRICES OF REFINED PRODUCTS...

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of May 6, 1941
**(Most prices in cents per gallon)**

The quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing.

## Refinery Gasoline

**OKLAHOMA (Group 3)—**

| | | |
|---|---|---|
| U. S. Motor grades: | | |
| 72-74 octane (regular) | .05⅛ | .05¼ |
| 63-66 octane | .04⅞ | .05 |
| 60 octane and below | .04¼ | .04½ |
| 60-62 400 grades: | | |
| 72-74 octane (regular) | .05⅛ | .05¼ |
| 63-66 octane | .04⅞ | .05 |
| 60 octane and below | .04¼ | .04½ |

**NORTH TEXAS—**

| | | |
|---|---|---|
| U. S. Motor grades: | | |
| 72-74 octane (regular) | .05 | .05¼ |
| 63-66 octane | .04¾ | .05 |
| 60 octane and below | .04¼ | .04½ |
| 60-62 400 | .04¼ | .05¼ |

**NORTH LOUISIANA (Ark. and N. La. delivery)—**

| | | |
|---|---|---|
| U. S. Motor grades: | | |
| 72-74 octane (regular) | .05 | .05¼ |
| 63-66 octane | .04¾ | .05 |
| 60 octane and below | .04¼ | .04½ |

**ARKANSAS (Ark. and N. La. del.)—**

| | | |
|---|---|---|
| U. S. Motor grades: | | |
| 72-74 octane (regular) | .05 | .05¼ |
| 60 octane and below | .04¼ | .04½ |

**CHICAGO (Based on Group 3)—**

| | | |
|---|---|---|
| U. S. Motor grades: | | |
| 72-74 octane (regular) | .05⅛ | .05¼ |
| 63-66 octane | .04⅞ | .05 |
| 60 octane and below | .04¼ | .04½ |
| 60-62 400 grades: | | |
| 72-74 octane (regular) | .05⅛ | .05¼ |
| 63-66 octane | .04⅞ | .05 |
| 60 octane and below | .04¼ | .04½ |

**PENNSYLVANIA (inland refineries)—**

| | | |
|---|---|---|
| 74-76 octane (regular) | .06 | .06½ |
| 72-74 octane | .05¾ | .06 |

**CALIFORNIA (domestic movement)—**

| | | |
|---|---|---|
| 58-60 400, 65 oct. and higher | .05½ | .07 |
| 54-58 U.S. Motor | .04¾ | .06¼ |

**EAST COAST (domestic)—**

| | | |
|---|---|---|
| U. S. Motor grades: | | |
| New York (Bayonne)* | .06¾ | .07 |
| Philadelphia | .06¼ | .06⅝ |
| Boston | .06½ | .06⅝ |
| Baltimore | .06 | .06¼ |
| Charleston, S. C. | .06½ | .06¾ |

*All grades of gasoline ⅛ to ¼ cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

**GULF COAST (domestic)—**

| | | |
|---|---|---|
| U. S. Motor grades: | | |
| 72-74 octane (leaded) | .05½ | .05¾ |
| 70-72 octane (unleaded) | .05¾ | .05⅞ |
| 68-70 octane (unleaded) | .05½ | .05¾ |
| Below 68 octane (unleaded) | .05¼ | .05½ |

## Natural Gasoline

**OKLAHOMA (Group 3)—**

| | |
|---|---|
| Grade 26-70 | .03¼ |
| Grade 18-55 | .03¾ |

**NORTH TEXAS—**

| | |
|---|---|
| Grade 26-70 | .03 |
| Grade 18-55 | .03½ |

**CALIFORNIA—**

| | | |
|---|---|---|
| 75-85 375-390 | .04½ | .05¼ |

**NORTH LOUISIANA (Ark. and N. La. delivery)—**

| | |
|---|---|
| Grade 26-70 | .03 |

## Tractor Fuel

**OKLAHOMA (Group 3)—**

| | | |
|---|---|---|
| 40-42 gr., 315-325 i.b.p., 110-flash, 540-550 e.p. | .03½ | .03⅝ |
| 41-43 gr., 300-320 i.b.p., 110-125 flash, 500-520 e.p. | .03⅝ | .03¾ |
| 46-48 gr., 210-230 i.b.p., 480 max., e.p. | .03⅞ | .04 |

## Kerosene

(All kerosene water white)

**OKLAHOMA (Group 3)—**

| | | |
|---|---|---|
| 42-44 | .04⅛ | .04⅛ |
| 41-43 | .04⅛ | .04⅜ |

**NORTH TEXAS—**

| | | |
|---|---|---|
| 41-43 | .04 | .04⅛ |

**NORTH LOUISIANA (Ark. and N. La. delivery)—**

| | | |
|---|---|---|
| 41-43 | .04 | .04⅛ |

**ARKANSAS (Ark. and N. La. del.)—**

| | | |
|---|---|---|
| 41-43 | .04 | .04¼ |

**PENNSYLVANIA (inland refineries)—**

| | | |
|---|---|---|
| 46 | .05¼ | .05⅜ |
| 45 | .05⅛ | .05¼ |

**CHICAGO (Based on Group 3)—**

| | | |
|---|---|---|
| 42-44 | .04¼ | .04½ |
| 41-43 | .04⅛ | .04⅜ |

**CALIFORNIA (Pac. Coast market)—**

| | | |
|---|---|---|
| 38-40 high-burning test | .04½ | .05½ |

**NEW YORK (Bayonne, N. J.)—**

| | |
|---|---|
| 41-43 | .052 |

**GULF COAST (domestic)*—**

| | |
|---|---|
| 41-43 | .03⅝ |

*Barge price ⅛ cent lower.

## Furnace Oil

**OKLAHOMA (Group 3)—**

| | | |
|---|---|---|
| Range oil | .03⅝ | .03¾ |
| No. 1 prime white, 38-42 | .03½ | .03⅝ |
| No. 1 straw, 38-40 | .03½ | .03⅝ |
| No. 2 straw, 32-36 | .03¼ | .03⅜ |
| No. 3 zero to 10, 28-32 | .03 | .03¼ |

**NORTH TEXAS—**

| | | |
|---|---|---|
| No. 1 prime white, 38-42 | .03½ | .03⅝ |
| No. 1 straw, 38-40 | .03½ | .03⅝ |

**NORTH LOUISIANA (Ark. and N. La. delivery)—**

| | | |
|---|---|---|
| No. 2, 32-36 | .03¼ | .03⅜ |

**ARKANSAS (Ark. and N. La. del.)—**

| | | |
|---|---|---|
| No. 2 32-36 | .03¼ | .03⅜ |

**CHICAGO (Based on Group 3)—**

| | | |
|---|---|---|
| Range oil | .03⅞ | .04⅛ |
| No. 1 prime white, 38-42 | .03¾ | .04 |
| No. 2 straw, 32-36 | .03⅜ | .03½ |
| No. 3 zero to 15, 28-32 | .03¼ | .03⅜ |

**NEW YORK (Bayonne, N. J.)—**

| | |
|---|---|
| *No. 1 | .052 |
| *No. 2 | .047 |
| *No. 3 | .047 |

**Barge deliveries ⅛ to ¼ cent under above tank-car price.

## Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

**OKLAHOMA (Group 3)—**

| | | |
|---|---|---|
| U.G.I. gas oil, under 35 | .02¾ | .03 |
| No. 5, low pour point, 18-22 | .75 | .80 |
| No. 6, 15 and above, 8-14 | .70 | .75 |

**NORTH TEXAS—**

| | | |
|---|---|---|
| U.G.I. gas oil, under 35 | .03 | .03⅛ |
| No. 5, low pour point, 18-22 | .75 | .80 |
| No. 6, 15 and above, 8-14 | .65 | .70 |

**NORTH LOUISIANA (Ark. and N. La. delivery)—**

| | |
|---|---|
| 10-14 fuel oil, industrial | .70 |

**CHICAGO (Based on Group 3)—**

| | | |
|---|---|---|
| U.G.I. gas oil | .03¼ | .03¼ |
| No. 5, low pour point, 18-22 | .75 | .80 |
| No. 5, 15 and above, 18-22 | .70 | .80 |
| No. 6, low pour point, 10-16 | .70 | .80 |
| No. 6, 15 and above, 8-14 | .70 | .75 |

**PENNSYLVANIA (inland refineries)—**

| | | |
|---|---|---|
| 36-40 | .04⅞ | .05 |

**CALIFORNIA—**

| | | |
|---|---|---|
| Los Angeles: | | |
| 30-40 gas oil, per bbl. | 1.10 | 1.25 |
| 24 plus diesel, per bbl. | 1.10 | 1.25 |
| 24 plus diesel (bunkers) | 1.20 | 1.35 |
| 12-16 (bunkers at tidewater) | .75 | .85 |
| 10-16 (cargo lots) | .75 | .85 |
| 12-17 (tank cars) | .65 | .75 |
| 10-17 (high sulfur) | .55 | .65 |
| San Joaquin Valley: | | |
| 10-18 (tank cars) | .70 | .85 |
| 24 plus diesel, per bbl. | 1.10 | 1.25 |
| San Francisco: | | |
| 24 plus diesel, per bbl. | 1.35 | 1.40 |
| 24 plus diesel (bunkers) | 1.40 | 1.50 |
| 10-16 (bunkers) | .80 | .85 |

**GULF COAST—**

| | | |
|---|---|---|
| No. 2 fuel | .03⅛ | .03¼ |
| 43-47 diesel | .03¼ | .03⅜ |
| 48-52 diesel | .03⅜ | .03⅝ |
| 53-57 diesel | .03½ | .03⅞ |
| 58-and-above diesel | .03⅝ | .03¾ |
| Diesel bunkers | | 1.45 |
| Bunker C (bulk cargoes) | | .85 |
| Bunker C (bunkers) | | .85 |

**NEW YORK (Bayonne, N. J.)—**

| | | |
|---|---|---|
| 27 plus, gas oil | | .048 |
| 28-30 diesel (lighterage 6¼c per bbl.) | | 1.95 |
| 28-30 diesel ((tank cars) | | .048 |
| Bunker C (to ocean-going ships in N. Y. Harbor) | | 1.35 |
| Industrial fuel (tank cars) | .03¼ | .03½ |

Ligtherage charge 5c bbl. additional.

## Bright and Steam Refined

**OKLAHOMA (Group 3)—**

| | | |
|---|---|---|
| 200-210 D, 10-25 | | .20 |
| 150-160 D, 0-10 | | .15½ |
| 150-160 D, 10-25 | | .15 |
| 100-110 D, 0-10 | | .15 |
| 100-110 D, 10-25 | | .14½ |
| Steam refined: | | |
| 600 dark green (untreated) | | .09 |

**PENNSYLVANIA—**

| | | |
|---|---|---|
| Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash): | | |
| 10 pour point | | .19½ |
| 15 pour point | | .18½ |
| 25 pour point | | .17 |
| Steam refined: | | |
| 600 | .09½ | .11 |
| 650 | .09½ | .13 |
| 600 flash | .10 | .12 |
| 630 flash | .11 | .12 |

## Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

**OKLAHOMA (Group 3)—**

| | | |
|---|---|---|
| 0-10 pour point: | | |
| 150-3 | | .09 |
| 180-3 | | .09½ |
| 200-3 | | .09½ |
| 250-3 | | .11 |
| 280-3 | | .11½ |
| 280-4 | | .11 |
| 300-3½ | | .12 |
| 350-3½ | | .12½ |
| 400-3½ | | .13 |
| 500-3½ | | .13½ |
| 600-3½ | | .14 |
| 100-2½ paraffin oil 10-25 | | .05¼ |
| 10-25 pour point: | | |
| 200-3 | | .09 |
| 250-3 | | .10½ |
| 280-3 | | .11 |
| 280-4 | | .10½ |

**CALIFORNIA (moving to dom. market)—**

| | | |
|---|---|---|
| Pale oils: | | |
| 200-2½-3 | .07¼ | .08 |
| 300-2½-3 | .07¼ | .08 |
| 400-3-4 | .07¼ | .08 |
| 450-3-4 | .07¼ | .08 |
| 550-3-4 | .09 | .11 |
| 600-3-4 | .09 | .11 |
| Red oils: | | |
| 200-4-5 | .07¼ | .08 |
| 300-5-6 | .07¼ | .08 |
| 350-5-6 | .09¼ | .11½ |
| 400-5-6 | .09¼ | .11½ |
| 450-5-6 | .09¼ | .11½ |
| 500-5-6 | .09½ | .11½ |
| 600-5-6½ | .09¼ | .11½ |
| 700-6½ plus | .09¼ | .11½ |
| 750-6½ plus | .09¼ | .11½ |
| 900-6½ plus | .09¼ | .11½ |

**GULF COAST—**

| | | |
|---|---|---|
| Pale oils: | | |
| 100-3 | .05⅛ | .05¼ |
| 200-3 | .07⅛ | .07¼ |
| 300-3 | .07½ | .07⅝ |
| 500-3½ | .08¼ | .08½ |
| 750-3½ | .08⅝ | .08¾ |
| 1,200-3½ | .08¾ | .08⅞ |
| 2,000-4 | | .09 |
| 3,000-4 | | .10¼ |
| Red oils: | | |
| 200-5-6 | .06⅞ | .07 |
| 300-5-6 | .07¼ | .07½ |
| 500-5-6 | .08 | .08¼ |
| 750 | .08⅜ | .08½ |
| 1,200-5-6 | .08½ | .08⅝ |
| 100-2½-3 | .07¼ | .08 |

**PENNSYLVANIA—**

| | | |
|---|---|---|
| 150 vis. at 70° F., 3 color, 400-405 flash: | | |
| Zero pour point | | .26½ |
| 10 pour point | | .25½ |
| 15 pour point | | .24½ |
| 25 pour point | | .23 |
| 200 vis., at 70° F., 3 color: | | |
| Zero pour point | | .28½ |
| 10 pour point | | .27½ |
| 15 pour point | | .26½ |
| 25 pour point | | .25 |

## Wax and Petrolatum

(Prices per pound)

**OKLAHOMA (Group 3)—**

| | | |
|---|---|---|
| 124-126 (A.m.p.) w.c. scale | .03 | .03⅛ |

**PENNSYLVANIA (inland refineries)—**

| | | |
|---|---|---|
| 122-124 (A.m.p.) w.c. scale | | .03¼ |
| 124-126 (A.m.p.) w.c. scale | | .03¼ |

**NEW YORK—**

| | | |
|---|---|---|
| Wax in bags fully refined: | | |
| 125-127 (A.m.p.) wax | | .0560 |
| 128-130 (A.m.p.) wax | | .0560 |
| 130-132 (A.m.p.) wax | | .0585 |
| 133-135 (A.m.p.) wax | | .0615 |
| 135-137 (A.m.p.) wax | | .0640 |
| Crude scale: | | |
| 124-126 (A.m.p. w.s. | | .03¼ |
| 124-126 (A.m.p.) y.s. | | .03¼ |
| Petrolatum in barrels, carload lots: | | |
| Dark green | .02500 | .02625 |
| Amber | .02375 | .02875 |
| Extra amber | .02625 | .03250 |
| Lily white | .04375 | .05125 |
| Snow white | .05125 | .06125 |
| Cream | .03375 | .04125 |

## Export Prices

### GASOLINE

**GULF COAST—**

| | | |
|---|---|---|
| 60-62 400 | .04⅛ | .05½ |
| 61-63 390 | .04⅛ | .05¼ |
| 64-66 375 | .04⅛ | .05¼ |

**LOS ANGELES—**

| | | |
|---|---|---|
| U. S. Motor grades: | | |
| Above 69 octane | .05½ | .05¾ |
| 65-69 octane | .05¼ | .05½ |
| 60-65 octane | .04½ | .05 |

### KEROSENE

**GULF COAST—**

| | | |
|---|---|---|
| 41-43 water white | .03⅜ | .03½ |

**LOS ANGELES—**

| | | |
|---|---|---|
| 41-43 water white | .05 | .05¼ |

### LUBRICANTS

(Pennsylvania Grade)

**NEW YORK (f.a.s. in bbl.)—**

| | |
|---|---|
| Cylinder stocks: | |
| 600 S.R. unfiltered | .18 |
| 630 S.R. unfiltered | .18¼ |
| 600 flash, S.R. | .18½ |
| 650 flash, S.R. | .20 |
| Bright stock: | |
| Light, 25 pour point | .22 |

### NEUTRAL OIL

| | |
|---|---|
| 200-3 color | .31 |
| 150-3 color | .28½ |

### PARAFFIN WAX

**NEW YORK (prices per lb.)—**

| | | |
|---|---|---|
| 123-125 A.m.p. | | .0560 |
| 125-127 A.m.p. | | .0560 |
| 128-130 A.m.p. | | .0583 |
| 133-135 A.m.p. | | .0615 |
| 135-137 A.m.p. | | .0640 |
| Crude scale: | | |
| 124-126 w.s. | | .03¼ |
| 124-126 y.s. | | .03¼ |

# MARKET RECORD OF ACTIVE OIL STOCKS . . .

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

## New York Stock Exchange

| 1941 High | 1941 Low | Week ended May 3 High | Week ended May 3 Low | Week ended May 3 Close | Stocks— | Total shares outstanding | Par value | Latest dividend | Payable or last paid | Dividends paid in 1940 | Com. sh. earn. 1939 | Com. sh. earn. 1938 | 1940 High | 1940 Low | 1939 High | 1939 Low |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52 | 44 | 51⅞ | 48½ | 51⅞ | Amerada Corp. | 788,675 | N.P. | 50cQ | 4-30-41 | $2.00 | $1.56 | $2.07 | 58½ | 38½ | 74½ | 50 |
| 24¼ | 20¾ | 23¼ | 22⅜ | 23¼ | Atlantic Refining | 2,663,999 | $25 | 25cQ | 3-15-41 | 1.00 | 1.66 | 1.40 | 27⅛ | 18¼ | 24¾ | 18⅛ |
| 10½ | 7 | 7⅜ | 7 | 7¼ | Barber Asphalt Co. | 390,223 | $10 | 25c | 5-21-40 | .50 | 1.39 | —.85 | 16⅝ | 8½ | 21 | 10¼ |
| 9⅝ | 7⅝ | 9¼ | 8¼ | 9¼ | Barnsdall Oil Co. | 2,558,779 | $5 | 15c | 3-10-41 | .60 | .76 | 1.26 | 13⅜ | 7⅛ | 19½ | 11⅛ |
| 6¼ | 5¼ | 6 | 5⅜ | 6 | Consolidated Oil Corp. | 13,751,726 | N.P. | 12½cQ | 2-15-41 | .72½ | .55 | .55 | 8⅛ | 5½ | 9⅞ | 6½ |
| 20½ | 17⅜ | 20 | 19⅛ | 20 | Continental Oil of Delaware | 4,682,572 | $5 | 25cQ | 3-31-41 | 1.00 | 1.35 | 1.10 | 25 | 16⅛ | 31½ | 19⅞ |
| 4½ | 3½ | 4⅜ | 3½ | 4⅜ | Houston Oil | 1,098,618 | $25 | .... | 10-17-30 | .... | .43 | .83 | 6⅞ | 3⅜ | 9⅜ | 4½ |
| 11⅜ | 9¾ | 10½ | 10¼ | 10½ | Lion Oil Refining | 435,815 | N.P. | 25cQ | 4-15-41 | 1.00 | 1.50 | 2.09 | 14⅜ | 9 | 18⅛ | 10 |
| 16 | 13 | 16 | 14¾ | 16 | Mid-Continent Petroleum | 1,857,912 | $10 | 40c | 6-2-41 | .80 | 1.42 | .56 | 17⅜ | 11½ | 18 | 11⅛ |
| 11 | 9⅜ | 11 | 10¼ | 11 | Mission Corporation | 1,378,645 | $10 | 25c | 12-20-40 | .25 | .87 | 1.04 | 11¾ | 7⅛ | 14⅞ | 8¾ |
| 6⅝ | 4¼ | 5⅛ | 4⅝ | 5 | National Supply | 1,155,517 | $10 | .... | 12-22-37 | .... | —.87 | —.79 | 9¾ | 4⅝ | 15½ | 5⅝ |
| 8⅜ | 6¾ | 8⅜ | 7½ | 8⅜ | Ohio Oil Co. | 6,563,377 | N.P. | 25c | 12-14-40 | .... | —.10 | .25 | 8¾ | 5⅜ | 10½ | 6 |
| 7¾ | 5½ | 7⅜ | 6¾ | 7⅜ | Pacific Western Oil | 1,000,000 | N.P. | 40c | 12-19-39 | .... | .81 | 1.22 | 8⅞ | 5½ | 11⅞ | 7 |
| 10 | 7¼ | .. | .. | .. | Pan American Pet. Trans. | 4,702,945 | $5 | 25c | 12-21-40 | .25 | 1.10 | .08 | 10½ | 6¾ | 8¾ | 5 |
| 41¼ | 35¾ | 40⅜ | 38⅞ | 40⅛ | Phillips Petroleum | 4,449,052 | N.P. | 50cQ | 3-1-41 | 2.00 | 2.21 | 2.03 | 41¾ | 27⅛ | 46½ | 31¼ |
| 16⅞ | 14¼ | 14⅞ | 14¼ | 14½ | Plymouth Oil Co. | 1,038,633 | $5 | 30c | 3-31-41 | ‡1.30 | 2.38 | 2.59 | 22¾ | 15 | 24 | 17⅛ |
| 9⅝ | 7 | 9⅜ | 8½ | 9⅜ | Pure Oil Co. | 3,982,031 | N.P. | 25c | 12-20-40 | .25 | 1.11 | .38 | 11½ | 6¾ | 11¾ | 6⅛ |
| 9 | 7¼ | 8⅞ | 8¼ | 8⅞ | Richfield Oil Corp. | 4,010,000 | N.P. | 50c | 12-21-40 | .50 | .65 | .51 | 9¼ | 5⅞ | 10¼ | 6⅝ |
| 15⅝ | 12½ | 14⅜ | 13½ | 14⅜ | Seaboard Oil of Delaware | 1,244,383 | N.P. | 25cQ | 6-14-41 | 1.00 | 1.40 | 1.52 | 20 | 11 | 24⅜ | 15½ |
| 13¼ | 10⅛ | 13¼ | 12¼ | 13¼ | Shell Union Oil | 13,070,625 | N.P. | 50c | 12-20-40 | .75 | .77 | .72 | 13⅛ | 7⅝ | 17¼ | 9⅞ |
| 27⅜ | 18⅞ | 27⅜ | 25 | 27⅜ | Skelly Oil | 995,349 | $15 | 50c | 12-20-40 | 1.25 | 1.99 | 2.27 | 23¼ | 12¼ | 29½ | 15½ |
| 9⅝ | 8¼ | 9⅝ | 8⅞ | 9⅝ | Socony-Vacuum | 31,206,071 | $15 | 25cSA | 3-15-41 | .50 | 1.10 | 1.29 | 12½ | 7⅛ | 15⅛ | 10¼ |
| 21½ | 17⅞ | 21½ | 20 | 21½ | Standard Oil of California | 13,003,953 | N.P. | 25cQ | 3-15-41 | 1.00 | 1.38 | 2.22 | 26⅛ | 16¼ | 33⅝ | 24¼ |
| 29⅜ | 25½ | 29⅜ | 27¼ | 29¼ | Standard Oil (Indiana) | 15,272,020 | $25 | 25c | 3-15-41 | 1.50 | 2.23 | 1.82 | 29 | 20⅜ | 30 | 22⅜ |
| 36½ | 33 | 36⅛ | 34⅞ | 36⅛ | Standard Oil of New Jersey | 27,280,998 | $25 | 75c† | 12-16-40 | 1.75 | 3.26 | 2.86 | 46½ | 29⅞ | 53½ | 38 |
| 39 | 34¼ | 37½ | 36⅝ | 37½ | Standard Oil of Ohio | 753,740 | $25 | 37½c | 3-15-41 | 2.00 | 6.64 | 1.81 | 41¾ | 26¼ | 32⅜ | 17 |
| 58¾ | 50 | 52 | 50¾ | 50⅞ | Sun Oil | 2,434,863 | N.P. | 25cQ§ | 3-15-41 | *1.00 | 2.74 | 1.07 | 65⅞ | 46⅜ | 66 | 45¾ |
| 1¾ | 1⅜ | 2 | 1½ | 2 | Superior Oil Corp. | 1,388,979 | $1 | 10c | 12-28-40 | .10 | .04 | .24 | 2½ | 1⅛ | 3⅝ | 1¾ |
| 40¼ | 34½ | 37⅞ | 36¾ | 37⅝ | Texas Corp. | 10,876,139 | $25 | 50cQ | 4-1-41 | 2.00 | 3.02 | 2.13 | 47⅝ | 33 | 50¾ | 32½ |
| 3⅜ | 2⅞ | 3½ | 3¼ | 3⅜ | Texas Gulf Producing Co. | 888,147 | N.P. | 10c | 12-14-40 | .20 | .69 | .86 | 4¼ | 2½ | 5¾ | 3¼ |
| 6¼ | 5¼ | 6 | 5⅝ | 6 | Texas Pacific Coal & Oil | 888,236 | $10 | 10c | 3-1-41 | .40 | 1.00 | 1.16 | 8⅝ | 5⅜ | 11⅜ | 7 |
| 10½ | 9⅜ | 10¼ | 9½ | 10¼ | Tide Water Associated | 6,371,827 | $10 | 15c | 3-3-41 | .70 | 1.05 | 1.28 | 12 | 8¾ | 14¼ | 9½ |
| 14½ | 12¾ | 13⅞ | 13⅛ | 13⅞ | Union Oil Co. of California | 4,666,270 | $25 | 25c | 5-10-41 | 1.00 | 1.25 | 1.47 | 17½ | 12 | 19¾ | 15⅛ |
| 29¾ | 25⅝ | 27½ | 27¼ | 27½ | Union Tank Car Co. | 1,177,381 | N.P. | 50c | 3-3-41 | 1.75 | 2.07 | 1.16 | 29⅞ | 22¾ | 24¼ | 20⅛ |
| 2⅛ | 1⅝ | 2 | 2 | 2⅛ | Wilcox Oil & Gas | 470,768 | $5 | 10c | 2-15-40 | .... | .77 | .52 | 3⅝ | 1¾ | 4¼ | 2⅝ |

*Also 5 per cent in stock. †Includes extras. ‡Also 2 per cent in stock. §Also 6 per cent in stock. —Deficit.

## New York Curb Exchange

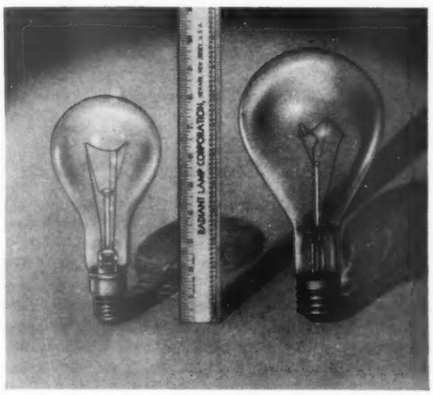
| 1941 High | 1941 Low | Week ended May 3 High | Week ended May 3 Low | Week ended May 3 Close | Stocks— | Total shares outstanding | Par value | Latest dividend | Payable or last paid | Dividends paid in 1940 | Com. sh. earn. 1939 | Com. sh. earn. 1938 | 1940 High | 1940 Low | 1939 High | 1939 Low |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7⅝ | 5⅛ | 7⅜ | 6½ | 7¼ | American Republics Corp. | 1,308,049 | $10 | 25c | 12-18-40 | .... | $0.14 | $0.22 | 10¾ | 4½ | 11¾ | 5½ |
| 1¾ | 1 | 1¼ | 1¼ | 1¼ | Bridgeport Machine Co. | 263,700 | N.P. | $1.25 | 12-30-37 | .... | —.95 | —.14 | 3¼ | 1⅜ | 7¼ | 2½ |
| 40¼ | 36½ | 37¾ | 37¾ | 37¾ | Buckeye Pipe Line Co. | 200,000 | $50 | $1 | 3-15-41 | $4.00 | 3.13 | 2.36 | 43 | 28 | 34¾ | 26½ |
| 110¼ | 97 | 100¼ | 97 | 97 | Chesebrough Mfg. Co. | 120,000 | $25 | $1.50Q† | 3-31-41 | 6.00 | 7.87 | 5.32 | 117 | 95 | 130 | 108⅝ |
| 5⅛ | 3¾ | 4½ | 4⅜ | 4½ | Cities Service (new) | 3,703,978 | $10 | .... | 6-1-32 | .... | .68 | .23 | 6¾ | 4 | 9¼ | 4¼ |
| 1⅛ | ⅝ | 1 | 1 | 1 | Cosden Petroleum | 465,332 | $1 | .... | ..... | .... | .... | .... | 2⅛ | ⅝ | 2¼ | ⅛ |
| 16 | 12½ | 16 | 14 | 16 | Creole Petroleum | 6,974,356 | $5 | 50cSA† | 12-16-40 | 1.00 | 1.38 | 1.64 | 24¼ | 11⅝ | 28 | 16¾ |
| 6½ | 3¾ | 6½ | 5⅝ | 6⅜ | Darby Petroleum | 351,390 | $5 | 25cSA | 1-15-39 | .... | .03 | .69 | 4⅜ | 2⅞ | 7⅛ | 3⅝ |
| 1½ | 1 | 1⅛ | 1 | 1 | Derby Oil & Refining | 263,162 | N.P. | .... | ..... | .... | —.37 | —.91 | 2 | ¾ | 2⅝ | 1⅛ |
| 28¾ | 21¼ | 21¼ | 21¼ | 21¼ | Eureka Pipe Line | 50,000 | $50 | 50c | 5-1-41 | 2.25 | .63 | —.37 | 31 | 20¼ | 23 | 15⅛ |
| 33½ | 29 | 32¾ | 30⅛ | 32½ | Gulf Oil Corp. | 9,076,202 | $25 | 25cQ | 4-1-41 | 1.25 | 1.69 | 1.43 | 39⅞ | 25⅛ | 45⅛ | 29¼ |
| 63 | 52¾ | 55½ | 55 | 55½ | Humble Oil & Refining | 8,987,840 | N.P. | 37½c | 4-1-41 | 2.00 | 3.33 | 3.98 | 68 | 47⅛ | 71 | 52⅛ |
| 7 | 5¾ | 6¾ | 6¼ | 6½ | Imperial Oil of Canada | 26,965,078 | N.P. | 25c | 12-2-40 | .62½ | .71 | .96 | 12⅜ | 5⅜ | 17 | 11⅜ |
| 3⅞ | 2¾ | 3 | 2¾ | 2⅞ | Indiana Pipe Line | 300,000 | $7.50 | 20c | 11-15-40 | *2.80 | .33 | .47 | 7¾ | 3 | 7¼ | 5½ |
| 10¾ | 8⅞ | 10¼ | 9½ | 10¼ | International Petroleum | 14,324,088 | N.P. | 30c | 12-21-40 | 1.25 | 1.19 | 1.98 | 10¾ | 8¼ | 27½ | 17 |
| 2⅝ | 1¾ | 1⅞ | 1⅞ | 1⅞ | Kirby Petroleum Co. | 500,000 | $1 | 10c | 3-15-41 | .... | .06 | .14 | 2¾ | 1⅝ | 3¾ | 2⅛ |
| 10⅛ | 8½ | 9⅜ | 9 | 9⅛ | Lone Star Gas | 5,518,347 | N.P. | 20c | 4-22-41 | .70 | .98 | .88 | 10¾ | 7⅝ | 10½ | 7⅛ |
| 4¾ | 4⅛ | 4⅝ | 4⅜ | 4⅝ | Louisiana Land & Exp. | 2,966,762 | $1 | 10c | 3-15-41 | .35 | .22 | .45 | 6¼ | 3¾ | 7¾ | 4 |
| 10 | 9½ | 10 | 10 | 10 | Margay Oil Corp. | 149,943 | N.P. | 25cQ | 4-10-41 | 1.00 | 1.52 | 2.28 | 17 | 9¼ | 17 | 14⅛ |
| 8 | 7 | 7¾ | 7⅝ | 7¾ | Midwest Oil Co. | 998,474 | $10 | 45c | 6-16-41 | .90 | .99 | .93 | 8½ | 6½ | 8¾ | 6⅝ |
| 6⅛ | 5⅛ | 6⅛ | 5⅞ | 6 | Mountain Producers | 1,593,584 | $10 | 30cSA | 12-16-40 | .60 | .70 | .62 | 6¼ | 4⅞ | 6 | 4⅞ |
| 12⅜ | 10⅞ | 11 | 10⅞ | 11 | National Fuel Gas | 3,810,183 | N.P. | 25cQ | 1-15-31 | 1.00 | .95 | .84 | 13⅛ | 10 | 14 | 11¼ |
| 12¾ | 10¼ | 11 | 10¾ | 11 | National Transit | 509,000 | $12.50 | 50c | 12-16-40 | 1.00 | .91 | .88 | 12½ | 8¾ | 9½ | 7¼ |
| 1¼ | 1 | .. | .. | .. | New Mexico and Arizona | 1,000,000 | $1 | 1c | 12-1-37 | .... | .02 | .02 | 1¼ | ¾ | 1⅜ | 1 |
| 8 | 6⅝ | 7½ | 7 | 7½ | New York Transit | 100,000 | $5 | 30c | 5-15-41 | .60 | .88 | .16 | 7¾ | 5¼ | 6 | 4 |
| 9¾ | 8 | 8½ | 7⅞ | 7⅞ | Northern Pipe Line | 120,000 | $10 | 50c | 6-2-41 | .80 | .31 | .24 | 9⅞ | 6 | 7 | 4½ |
| 3⅞ | 2⅝ | 3¾ | 3 | 3¾ | Pantepec Oil | 2,856,872 | $1 | .... | ..... | .... | .... | .... | 5½ | 2½ | 7⅝ | 4 |
| 2¼ | 1 | 2¼ | 1½ | 2 | Root Petroleum Co. | 336,045 | $1 | 25c | 2-1-37 | .... | .70 | .17 | 3¼ | 1 | 5 | 1¼ |
| 2½ | 2⅛ | .. | .. | .. | Ryan Consolidated | 298,931 | N.P. | 10c | 12-28-40 | .... | .16 | .29 | 3 | 1½ | 3 | 1⅞ |
| 8 | 6½ | .. | .. | .. | Southern Pipe Line | 100,000 | $10 | 25c | 3-3-41 | .50 | .25 | —.27 | 11¾ | 4¾ | 4⅞ | 3½ |
| 39¾ | 37 | 36¾ | 36½ | 36⅝ | South Penn Oil | 1,000,000 | $25 | 37½c | 3-28-31 | 2.50 | 2.84 | 1.44 | 44 | 28 | 40½ | 26⅝ |
| 30½ | 23 | 23⅛ | 23⅛ | 23⅛ | Southwest Penna. Pipe Lines | 35,000 | $50 | 50c | 4-1-41 | 6.50 | 2.06 | —.41 | 35 | 21 | 23 | 18 |
| 20⅜ | 17⅞ | 18¼ | 18 | 18¼ | Standard Oil of Kentucky | 2,604,790 | $10 | 25c | 3-15-41 | 1.30 | 1.53 | 1.45 | 20⅞ | 16½ | 20⅛ | 17¼ |
| 1¾ | 1⅜ | 1⅝ | 1½ | 1⅝ | Sunray Oil | 1,975,876 | $1 | 5c | 12-20-40 | .10 | .25 | .23 | 2 | 1⅜ | 2⅝ | 1⅜ |
| 3¼ | 2¾ | 2⅞ | 2⅝ | 2⅝ | Texon Oil & Land | 936,024 | $2 | 10c | 12-30-40 | 40 | .49 | .56 | 3⅛ | 2 | 4 | 2⅝ |
| 2¾ | 2¼ | .. | .. | .. | Transwestern Oil Co. | 750,000 | $10 | .... | ..... | .... | —1.42 | .12 | 3⅜ | 2 | 6 | 2½ |
| 1 1/16 | 15/16 | ¾ | ⅝ | ¾ | United Gas Corp. | 7,818,959 | $1 | .. . | ..... | .... | —.55 | —.51 | 2⅛ | ¾ | 3⅝ | 1⅛ |

*Includes $2.50 capital distribution. †Includes extras. —Deficit.

# EQUIPMENT PROGRESS...

## New High-Wattage Lamps Introduced by Radiant

A new type high-wattage lamp, just introduced, will enable petroleum producers, refiners and marketers to increase their illumination up to 250 per cent or more without changing fixtures. The use of a hard glass



bulb has made it possible to reduce the size of a 500-watt lamp to that of an ordinary 200-watt lamp, and also permits the lamp to withstand thermal shocks when used outdoors. The new lamp was originally designed for use in explosionproof fixtures.

Former attempts to reduce the size of high-wattage lamps resulted in melting of the bulb or collapse of the filament support, due to the intense heat developed. In place of the large "mogul screw" base and heavy fixture necessary to support the weight of an ordinary 500-watt lamp, the new lamp made by the Radiant Lamp Corp., 311 Sherman Avenue, Newark, N. J., can also use a "medeium screw" base like those in ordinary household fixtures. Unlike conventional lamps, the hard glass radiant lamp is said to withstand the sudden shocks of rain or sleet without cracking. Other size industrial lamps up to 10,000 watts are now being made to meet special requirements in various industries.

## Light Elevator for External Upset Pipe

A new, light type center-hinge elevator for handling external upset drill pipe has been developed by Web Wilson Oil Tools. Lighter by 100 lb. than other ele-

vators of similar capacities, this new elevator is particularly adapted to the lighter, medium-depth drilling and the new portable and slim-hole rigs.

A large sturdy latch and a heat-treated alloy steel hinge pin absorb the horizontal stress due to the wedging action of the tapered-pipe shoulder. A spring on the hinge pin automatically opens the elevator when the latch is operated, making it easier and faster both in the derrick and on the floor. A new principle has been incorporated in the latch design which makes it impossible to open the latch with the elevator under load. The need for a safety catch on the latch has been eliminated. Large, convenient operating handles make for fast, safe operation. These elevators have been laboratory tested to prove their rated capacity.

## New Synthetic Rubber Available To Equipment Manufacturers

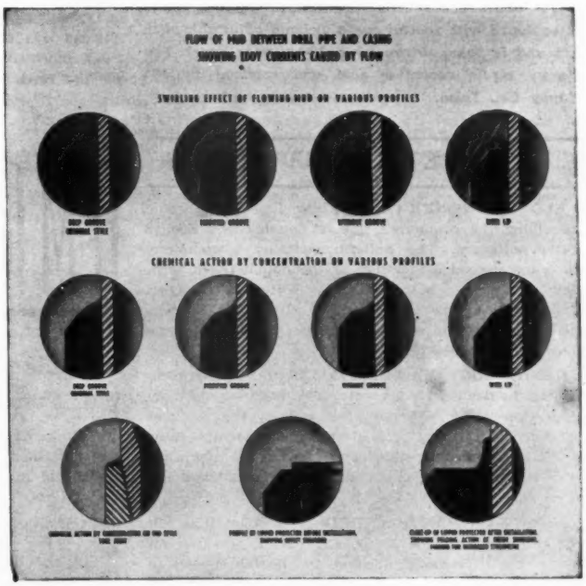
Murray Rubber Co. of Houston, Tex., has announced the immediate availability of Hycar O.R. (oil resistant) synthetic rubber, a new synthetic produced by Hydrocarbon Chemical & Rubber Co. According to officials of the Murray Rubber Co., Hycar is produced by an exclusive polymerization process which converts unsaturated hydrocarbon, butadiene, to synthetic rubber having many of the essential and better physical properties of natural rubber in addition to many important properties which natural rubber cannot possess.

The availability of this new synthetic rubber, which is being produced in large quantities from 100 per cent American products, should be of particular interest to oil-industry equipment manufacturers for two reasons: First, because defense industries are drawing heavily on the supply of established synthetic rubbers and, second, because Hycar shows excellent resistance to swelling and deterioration in the presence of crude oil and gasoline.

Under the supervision of Murray Rubber Co., a series of tests have been completed which substantiate the claims made for Hycar by its producers. In one test, a sample of Hycar was placed in crude oil and heated to 220° F. for 12 hours, at the end of which time it showed no swell and only slight reduction in tensile strength.

## NEW "LIP-TYPE" PROTECTOR PREVENTS "RINGING" OF DRILL PIPE

The new style drill-pipe protector developed by Patterson-Ballagh Corp. has been found to eliminate the "ringing" of drill pipe above and below the casing protector that took place when grooved or blunt-end protectors were used. The new streamlined protectors, with extended lips long enough to cover points where this erosion, chemical action or cavitation takes place, have been in service over 1 year and of some 30,000 installed in no instance has there been a report of "ringing."


FLOW OF MUD BETWEEN DRILL PIPE AND CASING
SHOWING EDDY CURRENTS CAUSED BY FLOW
SWIRLING EFFECT OF FLOWING MUD ON VARIOUS PROFILES
CHEMICAL ACTION BY CONCENTRATION ON VARIOUS PROFILES

It is necessary to make the protectors rather blunt on the ends, in order to keep them from tearing while being installed. It requires several tons pressure to expand a casing protector over the tool joint, and the blunt end is necessary for the installation; therefore, a perfect streamlining, like tool joints, is not practical. The extended rubber lips, however, form a rubber wall against which the chemicals in the mud can concentrate, thereby protecting the drill pipe against erosion or cavitation. Also, as the extended lips increase the area in contact with the pipe, and keep the mud from getting underneath, the gripping effect is said to be greatly increased, reducing the slipping action, and extending the life of the protectors.

The accompanying diagrams illustrate the development of the "profile" of the protector from the design first used, with the deep groove, to a lesser groove, to no groove, and then to the lip now used. The close-up of the lip before and after installing shows the shoulder inside. This shoulder keeps the lip from turning under during installation, and increases the slope of the lip after installation, making a more streamlined profile.

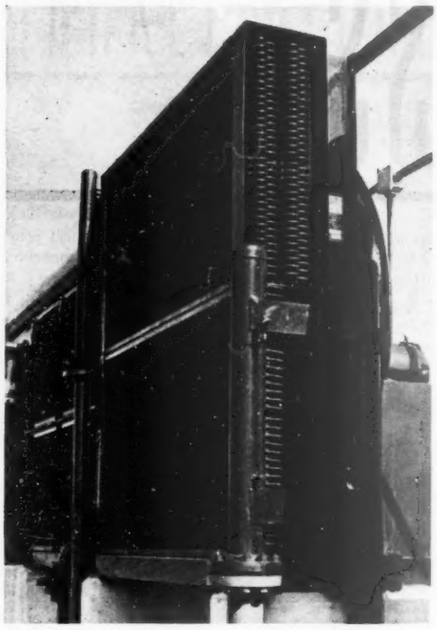
The oxidizing agent, which may be oxygen from trapped air in the drilling mud or it may come from the gas in the formation, is largely the cause of the ringing referred to above. The mechanics of the actual removal of the metal is that oxidation or erosion takes place by the following causes or combinations thereof:

*Cavitation.*—The protrusion of the protectors on the drill pipe is a cause of turbulence in the natural flow of the mud mixture. The velocity of the flow increases as it passes the protector, due to the restriction of areas between the protector and the casing. The change in pressure takes place directly above or below the protector and the decrease in the pressure causes some of the oxygen to be released at these points. This excess of oxygen will cause an increase in the oxidation at this point. This will cause a rusting action more extensive than takes place where there is normal flow. The iron oxide, or limonite, formed here is washed off by the mud, and the steel is pitted or "ringed" at this point. Pitting by this cause is commonly called "cavitation."

*Erosion.*—It has been observed that the more coarse sand or grit that is present in the mud, the more pronounced the "ringing" that takes place. No doubt the "sand blast" action of the grit at the points of turbulence is greater than where this cutting material is not present in excessive quantities.

*Chemical action.*—A third cause of "ringing" may be due to the mud itself, which is sometimes acid or alkaline, especially some of the new chemical muds. While the drill pipe is standing in the derrick, between "round trips," the mud that accumulates above the protector dries slowly and the chemicals therein concentrate. The rusting action increases toward the bottom of the mud cake, as the concentrated acid or alkali will oxidize the steel more than the normal fluid. When the protector is returned to the well, the rust is soon washed off by the flow of the mud.

## HAPPY AIR-FIN GAS COOLER . . .



*Section of cooler at pressure-maintenance plant near McAllen, Tex., used for cooling gas between stages of compression. This particular installation cools 8,200,000 cu. ft. of natural gas each 24 hours between first and second stages at 135 lb., and between second and third stages at 520 lb. pressure. Gas is being cooled to 10° above atmospheric temperature. This gas cooler is equipped with special cast-aluminum adjustable-pitch fan and is being driven by a 10-hp. gear motor. The Happy air-fin cooler is sold and serviced by the Happy Co., Tulsa.*

## TRADE LITERATURE

ELGIN SOFTENER CORP., Elgin, Ill.—Bulletin 605, describing the company's line of double-check Zeolite water softeners. The bulletin contains a complete, easily-understood description of the double-check principle, and shows how these new softeners, designed for its most efficient application, offer a 25 per cent increase or more in water-softening efficiency over conventional softeners of equal size.

HENRY VOGT MACHINE CO., Tenth and Ormsby Streets, Louisville, Ky.—Catalog F-8, covering its complete line of drop-forged steel valves, fittings and flanges. The 327-page book gives illustrations and cross sections of each item, dimensions, pressure-temperature service ratings, composition of steel or metal and list price.

SMOOTH-ON MANUFACTURING CO., Dept. 139, 570 Communipaw Avenue, Jersey City, N. J.—Booklet on how to make practical, low-cost and lasting repairs to equipment and pipe lines without dismantling or use of heat. Forty pages with 170 diagrams and simple, concise instructions on sealing cracks in castings, stopping leaks in apparatus, tightening loose fixtures and parts of equipment, making up tight pipe lines, patching concrete floors and walls, waterproofing cellars, cisterns, etc. A helpful repair guide for engineers, mechanics, and maintenance men.

MANHATTAN RUBBER MANUFACTURING DIVISION, Passaic, N. J.—Bulletin 6879, giving the advantages of using Condor Homo-Flex hose, which, according to the manufacturer, is a new hose development featuring an exclusive balanced, engineered construction. The bulletin contains interesting technical information and installation photographs, and describes all types of Condor Homo-Flex hose which include air and water hose, air-oil and oil-spray hose, and steam pressing-iron hose.

FAIRBANKS, MORSE & CO., 600 South Michigan Avenue, Chicago.—12-page booklet, "Modernizing Your Diesel," describing how its diesel engines that have been in service for many years can be modernized by use of certain changeover parts. Through rebuilding diesel engines with new parts such as cylinder heads, cylinders, pistons, connecting rods, needle bearing piston pins, etc., greater power and increased economy is ton pins, etc., greater power and increased economy are gained.

KEWANEE BOILER CORP., Kewanee, Ill.—Circular 97.80k, a 4-page folder lifted from its general catalog, giving specifications, tabulations, and diagrams of its Type C boilers.

HARMAN MANUFACTURING CO., First Street and Delaware Avenue, Vinita, Okla.—Price list and description of its line of oil-field specialties including casing heads, safety tubing elevators, tubing tongs, and combination rod oil-saver and stuffing box.

BABCOCK & WILCOX TUBE CO., Beaver Falls, Pa.—Technical Data Card No. 107A, new, revised list of standard specifications for seamless tubes and pipe, arranged in handy finger-tip form.

AXELSON MANUFACTURING CO., Box 98, Vernon Station, Los Angeles, Calif., Department A.—Six new bulletins describing in detail various sizes of Axelson heavy-duty 24-speed geared head lathes. In these bulletins both front and rear views of each size lathe are shown in large-scale illustrations. A detailed general description as well as itemized specifications are also furnished. The bulletin format has been worked out so that each separate bulletin can be added to a present engineering file of lathe data.

NORTON CO., Worcester, Mass.—26-page booklet, "Grinding and Finishing With Portable Equipment," describing its line of equipment for these purposes in the metal-working industries, for grinding and finishing welds and in the tool room and die shop. Types and sizes of grinding wheels commonly used on portable grinders are illustrated and specifications given.

LaPLANT-CHOATE MANUFACTURING CO., Inc., Cedar Rapids, Iowa.—Five new circulars, each 16 pages: Form A-110-636 describes each of the products manufactured by the company; Form A-111-637 describes the LaPlant-Choate hydraulic trailbuilder; Form A-112-638 describes its hydraulic bulldozer; Form A-113-639 is a booklet on the LaPlant-Choate Hydraulic "Carrimor" scrapers, and Form A-115-641 is a circular on the forced-ejection "Carrimor" scrapers.

## Abegg & Reinhold Co. Expand Plant Facilities

Back of Abegg & Reinhold Co., Ltd., manufacturers of oil-well tools and commercial heat treaters, is a story of modern American business enterprise. Starting in business over 36 years ago, today this concern, in addition to manufacturing oil-well tools, is the largest commercial heat treater on the Pacific Coast.

A new building 60 by 160 ft. has just been completed with all the latest improvements for handling and heat treating. Small electric as well as large gas-heated furnaces with capacity as high as 54 in. by 60 in. by 15 ft. are being installed. In addition, a new office building will soon be under way as well as additional plant expansion.

A new department for the repairing of drill pipe has been added. A special process (for which patent has been applied) has been developed whereby an alloy steel sleeve is shrunk and welded onto a worn tool joint. By this process expensive drill pipe is saved and restored to use.

Today the company is doing twice as much business as the peak year of 1929. The policy has been to grow slowly. Each new step has been carefully considered with the result that all new expansion is being financed out of past earnings and the company is free of all indebtedness.

## Catalyst Tube Cleaner

A tube cleaner designed to eliminate hazards associated with cleaning reactor tubes in polymerization units after the effectiveness of the catalyst has been reduced, has been announced by Airetool Manufacturing Co., Springfield, Ohio.

In operation, refuse is deposited in receptacles placed at the bottom of the discharge opening, forming a part of the main housing, or conducted to a disposal plant by means of an exhaust fan or conveying system. The device eliminates hazard of dust from the surrounding atmosphere, and makes unnecessary use of protective appliances to prevent burns or other inconveniences to the operators.

# AMONG EQUIPMENT MEN...

## Nomads to Plan Program for 1942 Petroleum Exposition

The planning of a program for international delegates to the 1942 International Petroleum Exposition to be held in Tulsa will be the main consideration of

an international Nomads meeting which is being planned for May 20, during the spring A.P.I. meeting to be held in Tulsa. Arrangements for this meeting were begun during a recent visit in Tulsa of Ted Sutter, general manager of Baker Oil Tools, Inc., and international president of the Nomads. Members of the Nomads chapters in Tulsa, Houston, Los Angeles, and New York, as well as international buyers, will be invited to participate in the meeting. In the photo are, left to right: Gerald Westby, vice president of the Tulsa Nomads; L. D. Baird, regent of the Tulsa Nomads; Fred E. Cooper, past president and former regent of the Tulsa group; Mr. Sutter; W. G. Green, Tulsa Nomads president; and H. M. Cosgrove, secretary of the Tulsa Nomads. The dates for the International Petroleum Exposition are May 16 to 23, 1942.

## W. F. Slater Appointed Kobe Tulsa District Representative

Appointment of W. F. Slater as Tulsa district representative has just been announced by Kobe, Inc., manufacturers of the Kobe hydraulic pumping system.

Mr. Slater fills the vacancy created by the transfer of H. K. Ihrig to Illinois as district manager in charge of the company's activities in the Illinois-Indiana-Kentucky territory.

Mr. Slater is well qualified for his new position, having had a well rounded and diversified experience with pumping problems in both the Mid-Continent and California fields. After completing his college work at the school of engineering in Tulsa University and Oklahoma University, Mr. Slater joined the Slater Oil Co. where he was responsible for that company's operations in the Glenpool area.

In 1936, he became associated with the S. M. Jones Co. as sales representative and in 1938 went to California in charge of their activities in that state. He

later joined the Walter O'Bannon Co. as advertising manager and held that position until his appointment as district representative for Kobe, Inc., in Tulsa.

## Egan Advanced to General Manager of Bridgeport

Appointment of M. J. Egan as vice president and general manager and I. C. Lawless as sales manager was recently announced by Bridgeport Machine Co.,

*M. J. EGAN* *I. C. LAWLESS*

Wichita, Kans. The two appointments were made in the general reorganization which took place following the death of A. A. Buschow, president and general manager, in March of this year.

Mr. Egan, who has been an executive of the company for a number of years, has come up to his present position through the ranks of the organization. He came with the Bridgeport Machine Co. 18 years ago, soon after the plant was moved from Augusta to Wichita, as a blacksmith's helper in the manufacturing division. After a short while, he was transferred to the cost-accounting department of the general offices, from which position he progressed through the various departments to the office of comptroller and office manager. In this position he has been active in the management of the company for a number of years.

I. C. Lawless, who has been in charge of the company's advertising and public-relations activities for the past 9 years, has been advanced to the position of sales manager. Mr. Lawless comes to his new position with a broad background of equipment-supply-industry experience and training. He first came with the Bridgeport in 1919 as general auditor, was promoted to the position of credit manager and a number of years later to the position of sales manager. He then left the company for several years to engage in independent advertising and general sales-promotional work but rejoined Bridgeport in 1931.

## Austin W. Clark Elected Vice President of National

The National Supply Co. has announced the election of Austin W. Clark as vice president, effective as of April 22, 1941. Previous to joining National in August 1940 as assistant vice president, Mr. Clark, who was born in Anaconda, Mont., and attended the University of California, had been associated for 4 years with Sears, Roebuck & Co., Chicago as assistant comptroller. Prior to that time he was for 14 years with the Hearst Publications in New York as comptroller and treasurer, and was also for 4 years with the Cerro de Pasco Copper Corp. in Peru, South America.

## Sperry-Sun Opens Three New Mid-Continent Offices

Sperry-Sun Well Surveying Co., Philadelphia, Pa., has announced the opening of three new district offices in the Mid-Continent in order to better supply the demand for its services in that territory. To cover North Texas and the southern part of Oklahoma the company appointed J. P. Klep as manager with offices in Fort Worth, Tex. W. F. Krueger was made representative in the remainder of Oklahoma and Kansas, with offices in Oklahoma City, and L. H. Creasy was made representative in West Texas with offices in Lubbock.

Mr. Klep, Mid-Continent district manager, graduated from the University of Louvain, Belgium, and received a master of science degree at the University of Oklahoma. He has been with Sperry-Sun since 1937. Prior to joining the company he was in the new tools division of Reed Roller Bit Co. from 1934 to 1937. Mr. Krueger received a bachelor degree in petroleum production engineering in 1935 at the University of Oklahoma. Prior to joining Sperry-Sun in 1538, he was in the Bureau of Mines station at Bartlesville, Okla.

Mr. Creasy is also a graduate of Oklahoma University, in 1936, in mechanical engineering. After working for Transwestern Oil Co. and Eastman Oil Well Survey Co. he joined Sperry-Sun in 1940.

## BUSINESS NOTES

The Clarence L. Boyd Co., Tulsa, Oklahoma City, and Guthrie, Okla., has been appointed Oklahoma distributor for the Koehring Co. of Milwaukee, Wis. Koehring is well known in the oil trade as manufacturers of dirt-moving equipment, shovels, wheelers, cranes, hoists, concrete mixers, pavers, and other oil field and contractor's equipment.

The Cincinnati Rubber Manufacturing Co., Cincinnati, Ohio, announce the appointment of John Flocker & Co., 644 Grant Street, Pittsburgh, Pa., as distributors of the complete line of Cincinnati industrial rubber products for Pittsburgh and surrounding counties.

Frick-Reid Supply Corp., Tulsa, has announced the appointment of H. H. Brown, formerly assistant purchasing agent, as manager of inventory, heading a new department to be known as the inventory department. The functions of this department will be to maintain continuous control of store, warehouse and yard inventories to properly meet the demands of its trade. A. F. Stadler of the purchasing department has been appointed assistant purchasing agent.

## Wickwire Spencer Names Lynn As Export Sales Manager

The Wickwire Spencer Steel Co., with general offices at 500 Fifth Avenue, New York, announces the appointment of William Harcourt Lynn as export sales manager. Prior to joining the Wickwire Spencer company in March 1939, Mr. Lynn was for 6 years general manager of the Meddo Steamship Corp. operating coastwise vessels. Mr. Lynn was also employed at one time in the shipping and purchasing departments of the International Railways of Central America.

Conway Studios, N. Y.

Born in 1900 in San Jose, Costa Rica, of American parentage, Mr. Lynn received his education at Staunton Military Academy and Columbia University. Communications pertaining to export sales should be addressed to him at the general offices.

## Bowman Is Made Director of Public Relations For Roebling

*ROBERT T. BOWMAN*

Appointment of Robert T. Bowman, of Trenton, N. J., as director of public relations for the John A. Roebling's Sons Co., with plants at Trenton and Roebling, N. J., and branch offices in 13 cities, was announced at Trenton by Charles G. Williams, executive vice president and general manager of the Roebling company. Mr. Bowman assumed his new post on May 1. He served 3 years as president of the New Jersey State Chamber of Commerce and retired from that position recently.

## "OILWELL" ANNOUNCES THREE CHANGES IN DISTRICT MANAGERS

William Miskimins, sales manager of Oil Well Supply Co.'s Panhandle district for the past 4 years, has been appointed sales manager of the recently combined West Texas district for the past 4 years, has been appointed sales manager of the East Texas, North Louisiana, and Arkansas district, with headquarters at

*M. F. HAZEL* *S. E. SNOW* *WILLIAM MISKIMINS*

North Texas and Panhandle district with headquarters at Wichita Falls. This new district comprises the branches formerly included in the separate North Texas and Panhandle districts, the latter with headquarters at Pampa, Tex.

Joining "Oilwell" in 1917 at Houston, Mr. Miskimins has been associated with the company's store and sales activities at various points in Texas, Louisiana, and Kansas. He is well acquainted in the North Texas area, having been district manager from 1932 to 1934.

D. R. (Ray) Smith, sales manager of Oil Well Supply Co.'s former North Texas district since 1939, has been transferred to "Oilwell's" general office at Dallas to fill an important post in the merchandise department.

M. F. (Mike) Hazel, sales manager of the company's Shreveport, La. Mr. Hazel joined "Oilwell" in 1930 at the Oil City, Pa., manufacturing plant. He covered many of the oil fields of Oklahoma and Texas, first as a service engineer and later as a sales engineer. In the latter capacity he became widely acquainted throughout East Texas, North Louisiana, and Arkansas, where he was located for several years before he was made sales manager of the West Texas district.

S. E. (Red) Snow, manager of Oil Well Supply Co.'s Houston, Tex., store since 1938, has been appointed sales manager of the West Texas district with headquarters at Odessa. This promotion brings Mr. Snow back to the area in which he represented "Oilwell" from the time he joined the company in 1926 at Best, Tex., until he transferred to Beaumont in 1935 as manager of that branch.

# CLASSIFIED ADVERTISING

THE MARKET PLACE OF THE OIL INDUSTRY . . .

### Patent Attorneys

**PATENTS — TRADE MARKS**

***All cases submitted given personal attention.***

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### Leases and Drilling Blocks

**LEASES**—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

WARD-Crane sec. 18B 28, near Silurian test; cheap fee or lease. J. G. Smith, 215 Littlefield Bldg., Austin, Texas.

NEW MEXICO
Oil and Gas Leases and Royalties
ROY G. BARTON, Hobbs, N. M.

NEW MEXICO
STATE OIL AND GAS LEASES
FORTY acres and multiples thereof. Near major company lease blocks. Five cent rentals. Ten Year term. Write for information.

HARRY S. WRIGHT
New Mexico State Lessee
Farmington, New Mexico.

60 ACRES Semi Proven lease for development, on override bases in Texas. Wells flow. Box A-432, The Oil and Gas Journal, Tulsa, Okla.

LEASES & ROYALTIES. New field in Western N. Dakota. Get in now while prices are low. The Willoymer Co., Center, N. Dakota.

EXCEEDINGLY shallow oil found in undeveloped region. Write N. M. Sauls, Geologist, Cookeville, Tennessee.

FOR SALE: Oil and gas leases and small production located in Kentucky shallow field, also tracts of proven Fluorspar and zinc deposits. Reports on request. W. P. HARLEY, Bowling Green, Kentucky.

FOR LEASE: 10,250 acres of Oil and Gas Rights Well Located Geologically for Oil and Gas in Breathitt and Perry Counties, Kentucky. For information write Alan Germer, Box 264, Hazard, Kentucky.

MICHIGAN—1,160 acres to lease for Oil and Gas. Map free. Owner: L. J. Meldrum, 8354 Epworth, Detroit, Mich.

VISITING Tulsa end May, would acquire drilling block, royalty, leasehold or purchase in fee, with mineral rights, in undeveloped but proven, or producing gas or oil field. Preferably Hugoton-Amarillo districts. Henry Berger, 41 Central Park West, New York.

FOR SALE: 15-well oil lease; shallow; Bartlesville sand; ideal for water flooding. H. W. Mitchell. Osawatomie, Kans.

TWO A-1 Drillers want partner with finance to purchase drilling rig. Plenty of work. Investigate. Box A-483, The Oil and Gas Journal, Tulsa, Okla.

WILL you sell or buy producing acreage? Will you drill on good geology? Arthur Nickell, Fayette, Mo.

WANT drilling deal to develop highly geologized Pine Mountain, Segment Basin and Airport structures in Natrona County. P. O. Box 1162, Casper, Wyoming.

HOMER L. FITCH, GEOPHYSICIST AND LOCATION ENGINEER
WHY drill dry holes? Our method only locates structures which contain oil or gas. Drawer 711, Brownsville, Texas.

ELLIS CO. KAN. 160. Farmout deal Jefferson Co. Cheap leases. 40 acre tracts adjoins Magnolia block, McLouth field. Harry Haynes, Grantville, Kan.

OFFER very attractive producing oil lease in Central Texas field, investment $100,000.00; no trade. Edwin McKellar, Austin, Texas.

WILL sacrifice for quick sale account of health, Lea County, New Mexico 40 acres each Sections 15 and 21, 17S-36E. Lock Box 126, Vinton, Va.

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**LEASES ROYALTIES**
**PRODUCING OR NONPRODUCING**
Texas, New Mexico, Oklahoma, Louisiana and Illinois
20 Years Experience
Inquiries Invited

**B. D. BUCKLEY**
Paul Brown Bldg., St. Louis, Mo.

EAST Texas Lease, nine year run, near Magnolia, Humble Oil, $1 acre. LAHM, 2931 Missouri, St. Louis, Mo.

### Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press. 215 East Third St., Tulsa, Okla.

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DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

CAPITAL SEEKERS
Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan.

### Mailing Lists

ROYALTY owners, Oil Investors, Unit holders, Stockholders in Oil and Royalty Companies. Personnel lists of every branch of oil industry. All by States. We buy lists. New catalogues ready. Oil Industry Mailing List Co., Tulsa Loan Bldg., Tulsa, Oklahoma.

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ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma

WE BUY & SELL all types of Oil and Gas Royalties. Sales restricted to registered dealers only. Grimes Royalty Co., Tulsa Loan Bldg., Tulsa, Okla.

I OFFER — Production Royalties in Nueces County, Texas. Monthly income. John P. Stouppas, 38 S. Watt Street, Youngstown, Ohio.

### Ranches—Farm Lands

WE HAVE assembled several hundred choice farm and ranch properties located throughout Texas, Oklahoma, New Mexico and Colorado, priced below present market with reasonable terms if desired. Write today for our farm lands and ranch lands booklet containing full descriptions, prices and terms. J. C. MYTINGER REALTY COMPANY, P. O. Box 1190, Wichita Falls, Texas.

### Geologic Survey

U. S. and State lists of Geological publications available FREE upon application. Cornwall's Book Store, 723 11th Street N. W., Washington, D. C.

GEOLOGICAL Survey bulletins listed by states. Send for lists. For sale by J. C. Howgate Bookseller, 120 So. Church, Schenectady, N. Y.

### Help Wanted

STILLMAN for small refinery. Give references, state age, if married, and wages expected. Terry Carpenter, Inc., Scottsbluff, Nebraska.

DRAFTSMAN with experience in oil refinery design and construction. Location Middle West. State age, education, experience, and salary desired. Box A-473, The Oil and Gas Journal, Tulsa, Okla.

SALES executive with established petroleum jobber clientele 50-mile radius Chicago—Apply Feldman Petroleum Co., 544 W. Roosevelt Rd., Chicago.

### Help Wanted

SALESMAN experienced in sale seamless steel tubing and pipe, alloys and carbon grades, or man with sales experience steel commodity or steel specialty selling. Write, enclosing full particulars. Box A-452, Oil and Gas Journal, Tulsa, Okla.

MACHINIST capable of maintaining Worthington BG and CG gas engines, centrifugal and reciprocating pumps including hot oil pumps, also operation machine shop tools. Refinery experience preferred. Open shop. Box A-472, The Oil and Gas Journal, Tulsa, Okla.

### Situations Wanted

EXPERIENCED Lease and Title Man needs work. Capable, Honest and willing. Best references. P.O. Box 372, Jasper, Tex.

EXPERIENCED production superintendent, manager, wants position with substantial company at fair salary. Experienced in Louisiana and Texas. Box A-484, The Oil and Gas Journal, Tulsa, Okla.

REFINERY Engineer, Superintendent, Manager. Well experienced in design, construction and operation of modern refinery equipment, Age 41. Box A-480, The Oil and Gas Journal, Tulsa, Okla.

REFINERY Engineer, licensed Chemical Engineer, Texas University Graduate. Over eleven years' experience includes Plant Engineer, Chief Chemist, and Process Engineer. Proven administrative and technical ability. Exceptional record in process studies and cost reduction as related to gasoline and lube manufacture. Now employed major oil company. Box A-482, The Oil and Gas Journal, Tulsa, Okla.

### Equipment Wanted

WANTED: All makes of used Diesel Engines, preferably "Caterpillar" Diesels. Write price, condition and location to Fabick Tractor Co., Box 503, Salem, Ill.

**WANTED:**
**USED DRILLING LINES**
Sizes ¾", ⅞" and 1". Not necessarily long lengths.

**M. ZLOTNICK**
**499 Canal St. New York, N. Y.**

### Business Opportunity

**ATTENTION: MANUFACTURERS OIL WELL SUPPLIES AND EQUIPMENT**

We have space available in our warehouses conveniently located to all principal oil fields in Texas, Oklahoma, Kansas, California, and Illinois. Will warehouse oil field goods and make deliveries in our own trucks at extremely low cost. If sales possibilities sufficiently attractive would consider outright purchase of goods for resale on jobber or distributor basis. Box A-481, The Oil and Gas Journal, Tulsa, Okla.

### Business Opportunity

### For Sale—Equipment

1—10,000 gallon Tulsa Type Distillation unit with stabilizer and pumps complete. W. S. Smith, 523 Thompson Bldg., Tulsa, Okla., 2-5473.

FOR SALE: 2—14½"x7¼"x18" Ideal steam pumps. Murray Tool & Supply Co., 214 Beacon Bldg., Tulsa, Okla.

FOR SALE: Complete Gumbo Buster Russian Model Drilling Rig, Steel Tool House and all tools, good shape, $11,000.00. Robert L. Childress, Corsicana, Texas.

3—#25 Southwestern Distillation units completely overhauled, can furnish with either high or low pressure absorbers. W. S. Smith, 523 Thompson Bldg., Tulsa, Okla., 2-5473.

FOR SALE: Pressure vessels 8' diameter by 31' 8" long. Tested 200 pounds hydrostatic pressure. 3—12 x 10 x 18 duplexes National Transit steam pumps. Harvey Brothers, 706 Rudd, Canon City, Colo.

2—#45 Star S.T. Spudders or will trade for production. Bert Miller, Phone 623, Salem, Illinois.

FOR SALE at Oklahoma City: Two Direct Current Belt Driven GE Generators, 7½ K.W., Type C.D., $100 each.—I.T.I.O. Co., Bartlesville, Okla.

3 PUMPING DERRICKS with Fronts, 25 H.P. Superior Engines, Houses, Belts, etc., near Cushing, Okla. Bargains. Gas Engines, 15 H.P. to 190 H.P., and all kinds of used pipe and casing, at Okmulgee and Shawnee, Okla. Okmulgee Supply Corporation.

3—165 H.P. type X Bessemer Direct Driven Compressor. Can furnish all sizes Compressor cyl. W. S. Smith, 523 Thompson Bldg., Tulsa, Okla., 2-5473.

## CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

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We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

## THE OIL AND GAS JOURNAL

Tulsa, Oklahoma

# REFINERY EQUIPMENT—PIPE—VALVES & FITTINGS

## BARNSDALL REFINERY—OKMULGEE, OKLAHOMA
## COMPLETE COMBINATION KELLOGG UNIT

75,000 ft. 4" Std. Line Pipe T & C
16,000 ft. 3" Std. Line Pipe T & C
Breckenridge, Texas

**Complete Line Series Steel Valves & Fittings**

## SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry and H. J. Galamba
Riverview at Second, Kansas City, Kansas

Robt. W. Duden
2100 S. Union, Tulsa, Oklahoma

---

**FOR SALE**

One gasoline drilling rig with two 85 H.P. Waukesha motors and unitized draw works complete.
300 sets 3" A.P.I. tool joints.
10,000 Ft. 7" O.D. 26# seamless casing, once run.
15,000 Ft. 4½" O.D. seamless drill pipe equipped with both regular and full hole tool joints.
In addition to the above we have several thousand feet of all sizes line pipe. Also a drilling rig capable of drilling to 6500 feet and a complete stock of casing, drilling and pumping equipment.

Wire, Write or Phone for Prices.

**Louisiana Iron & Supply Co.**
**Shreveport, La.**

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FOR SALE OR RENT: Gas engine powered Rotary Drilling Rig complete. Suitable for 4,500' drilling. Box 1360. Phone 312, Seminole, Okla.

FOR SALE — At Oklahoma City — 11 6" and 8" Byron-Jackson built-in motor pump heads for use in operating deepwell turbine pumps. I. T. I. O. Company, Bartlesville, Oklahoma.

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**NEED TANK CARS?**
**For Sale:**

Forty, 10,000 gal. Class III, built late 1918 by Gen. Amer. Eight lines 2" pipe.
Well maintained and ready for immediate service.
Many other TANK CARS, FREIGHT CARS & LOCOS. for sale, too.
Also, CAR REPAIR PARTS.

**HAVE YOU ANY CARS FOR SALE?**
**Iron & Steel Products, Inc.**
36 years' experience
**13412 S. Brainard Ave., Chicago, Ill.**
*"Anything containing IRON or STEEL"*

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CROWN BLOCKS: All types light and heavy duty production and cable tool—Real Bargains. Lucey Products Corp., Tulsa, Okla.

FOR SALE: Model 15 Buckeye ditching machine, A-1 condition. Cheap for cash. A. L. Abrams, Woodville, Okla.

2—48" x 30' 16-tray, 450#, SW Absorbers. 5—72" x 30' 12 to 15-tray, 75#, Absorbers. 1—60" x 30' 11-tray, 75#, Absorber. W. S. Smith, 523 Thompson Bldg., Tulsa, Okla., 2-5473.

USED DRILLING EQUIPMENT
1—5-C-3 Ideal Unitized Drawworks
2—Martin-Decker Weight Indicators
2—3½" B-J Extra Heavy Tongs
2—6⅝" B-J Extra Heavy Tongs
1—W-K-M Hauser Kelly Drive
LUCEY PRODUCTS CORP., Tulsa.

FOR SALE at Oklahoma City: 7' x 30' 10 Tray Tulsa Boiler Absorber with Taylor Nozzles, purchased new in 1929, $1,000.00. I.T.I.O., Bartlesville, Okla.

FOR SALE: 125 H.P. 200 W.P. Broderick Boiler, Code Condition. $975. Melton Supply Co., Seminole, Okla.

SALE—New 9⅝"—13¾"—13" O.D. Casing Couplings. Want to buy a SHEAR and PLATFORM SCALE. Box 574, Tulsa.

FOR SALE at Oklahoma City: Reconditioned 12" Goulds Fig. 3065 Single Stage, Double Suction, Centrifugal Pump with bed plate for motor mounting, 6,000 G.P.M., 96 ft. head, 1175 R.P.M. — I.T.I.O. Co., Bartlesville, Okla.

CASING FOR SALE IN WESTERN COLORADO—5⅛" and 6⅝" O.D. welded casing in excellent condition. S. W. McLaughlin, Rangely, Colorado.

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**FOR SALE**

25-Ton 0-4-0 Davenport Loco., S/G. NEW FLUES. EXCELLENT CONDITION. Immediate Delivery.

2, 0-4-2 S/T Oil Burner Locos. A.S.M.E. BOILERS. New 1919, used only 4 years.

SEND US YOUR INQUIRIES FOR ANY KIND OF LOCOMOTIVES

**IRON & STEEL PRODUCTS, INC.**
36 years' experience
**13412 S. Brainard Ave.**
**Chicago, Ill.**
*"Anything containing IRON or STEEL"*

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25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St., Cincinnati, Ohio

FOR SALE: 6—40 gallon foam—outdoor type mounted fire extinguishers. Also 34—5 gallon foam type. I.T.I.O., Bartlesville, Okla.

FOR SALE—Vertical Twin Cylinder 55 H.P. Bruce McBeth Gas Engine, $390 f.o.b. Brilliant, Ohio. Write P. O. Box 392.

5—7' x 40" Bolted and flanged gasoline storage tanks. W. S. Smith, 523 Thompson Bldg., Tulsa, Okla., 2-5473.

FOR SALE at Oklahoma City: Bovaird Split Type Tubing Elevators, $50.00 per set. I.T.I.O. Co., Bartlesville, Okla.

---

**YOUR dependable and cheapest source of supply!**
**Tank & Freight Cars; any kind**
**Tank & Freight Car Repair Parts;**
**Locomotives; All Kinds**
**Relaying Rails**
Perhaps *we* can supply your requirements and — immediately!
OTHER MACHINERY AND EQUIPMENT TOO!
**Destination inspection if desired!**
**IRON & STEEL PRODUCTS, Inc.**
36 years' experience
**13412 S. Brainard Ave., Chicago, Ill.**
***"Anything containing IRON or STEEL"***
***Ask to be placed on our various mailing lists.***

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FOR SALE near Barnsdall, Oklahoma: 2—Griscom Russell DAA-248 Twin G-Fin Sections, Serial Nos. 62230-1 500# maximum W. P. $100.00 each section. I.T.I.O., Bartlesville, Okla.

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**The Advertising Dollar**

**should buy space that reaches the maximum number of readers with money to spend. In the oil industry only one medium does this—**

**THE OIL AND GAS JOURNAL**
**DON'T MISS AN ISSUE**

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FOR SALE
1 Rotary Drilling Rig D. C. Electric Powered By 2—300 HP Waukesha Gas Engines; complete LESS Drill Pipe.
1 Large Mechanical Rotary Drilling Rig, Tex-Rope driven with Large Portable Clutch powered by 2—300 HP Waukesha Gas Engines; complete LESS Drill Pipe.
1 Cable Tool Drilling Unit Lee C. Moore Type "B" Front, Unitized Bull Wheels with ⅞" x 4500' Drilling Line, O.C.S. Greyhound Chain driven Sand Reel complete with ⅞" x 5500' Sand Line, Boiler, Engine and Tools Complete. Has drilled in two wells after Rotary. Practically new.
FOR FURTHER INFORMATION AND INVENTORY WRITE
Box A-401,
The Oil and Gas Journal, Tulsa, Okla

FOR SALE: 1—8x8 Ingersoll-Rand Compressor, 1—10x4½x10 Chicago Pneumatic Compressor, 1—8x4x8 Wheatly high pressure pump direct driven. Williams Supply Co., Bartlesville, Okla.

NOTICE — CABLE-TOOL CONTRACTORS. Save money; good used wire lines. All sizes up to 5,000 ft. long. See us before you buy. General Tool & Supply Co., P.O. Box 4387, Oklahoma City, Oklahoma.

---

**COMPLETE**
**CORE DRILLING UNIT**

Good for 2,000 feet, mounted on 1940 Model AC403 GMC Truck, equipped with 2 speed Eaton rear axle—500 feet 2⅝" O.D. drill rod with 3" Fl'ge couplings—15 Drill bits—Offered for immediate sale—

**SONKEN-GALAMBA SUPPLY CO.**
**Tulsa, Oklahoma**

---

FOR SALE at Bartlesville: One 8" x 3¼" x 8" Ingersoll-Rand High Pressure Portable Compressor. I.T.I.O., Bartlesville, Okla.

FOR SALE at Oklahoma City: Dunn No. 3 Safety Automatic Spring Rod and Tubing Hooks, $20.00 each. I.T.I.O. Co., Bartlesville, Okla.

---

**FOR SALE**

1—95F OCS Universal Pumping Unit, Complete with 55 HP Reid Engine.
1—136' Lee C. Moore Rotary Derrick.
2—50 HP Bessemer Engines.
5500 Feet of 4" Drill Pipe.

**HORWITZ PIPE & SUPPLY CO.**
**P. O. Box 1406**
**Okahoma City, Okla.**

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FOR SALE: 20,000 feet of No. 1—3-inch line pipe. 25,000 feet of No. 1—2-inch line pipe. Pipe and casing of all sizes. Simon Cohen & Sons Pipe & Supply Co., Augusta, Kansas.

FOR SALE—2 strings Rotary Tools offered at Bargain Prices. Capable of drilling to 3500 feet. Located on Gulf Coast. Inventory on request. Address inquiries to Box 670, Fort Worth, Texas.

FOR SALE: 1—10 ton Chisholm Moore Traveling Hoist with floor crane. 100 ft. Portable track. 1—10 ton chain hoist with hook. Emco Equip. Co., First Natl. Bldg., Oklahoma City, Okla.

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**FOR SALE**

**150,000 ft.—14" O. D.**

***Grade B***

**SEAMLESS PIPE**

**.259" wall—38 lbs. per ft.**

**Double random lengths**

**Used only few years as gas line. All coated and in condition equal to new.**

**Also field bends, valves, Dresser couplings, river clamps and other fittings.**

**Located in Pennsylvania. Shipment can start May 1. Complete in 60 days.**

**Attractive Price**

**Phone, write or wire**

**L. B. FOSTER CO.**
**P. O. Box 1647**
**PITTSBURGH, PA.**

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FOR SALE at Oklahoma City: 1 Jones Super Woodworker with four cylinder Le Roi Engine. I.T.I.O. Co., Bartlesville, Okla.

**TRACTORS**

Caterpillars, crawler type, size "35" $375; size "65" with nigger head winch $795.00; Allis-Chalmers, model L with bulldozer $1850; Austin Western hydraulic grader 10' blade $650. O. C. Evans, Mt. Sterling, Kentucky.

FRANKS MACHINE CO.—ENID—MODEL D, shot hole core drill, mounted on V-8 Ford Truck, complete with bits, barrel, fish tails, foot clamp, also 1400 ft. good 2⅜ "N" Rod. Above in A-1 condition. Will sell drill and stem separately.
PHIL O'NEILL
Phone 466 Enid, Okla.

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## Tank-Wagon Changes

*(Continued from Page 120)*

prices 0.4 cent per gallon April 22 in South Carolina and on April 23 in North Carolina. Exceptions in North Carolina dealer tank-wagon advances were: Charlotte, 1 cent; Mount Airy, 1.4 cents; Raleigh, 1.05 cents and Salisbury, 1.4 cents.

Standard of New Jersey advanced motor fuel 0.5 cent per gallon April 25 in Maryland, District of Columbia, and West Virginia. On the same date, tank-wagon prices were advanced 0.6 cent per gallon with the net price to dealers increasing 0.8 cent, posted tank-car price 0.8 cent and minimum retail resale price advancing 1 cent per gallon in the district and two states. The kerosene tank-wagon price was advanced 0.5 cent April 24 in Virginia. A reduction in kerosene of 1.1 cents per gallon was made April 22 at Charlotte, N. C., but on April 24, a statewide advance of 0.3 cent per gallon was made throughout North Carolina on kerosene deliveries.

Continental Oil Co. reduced the consumer tank-wagon price of gasoline at Tulsa 1 cent per gallon.

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# *Is corrosion your problem?*

# *lick it with*

# X MAYARI SUCKER RODS

It's easy to cut down costly pumping hold-ups caused by sucker rod failures. Just shift to a rod that has already proved itself in hundreds of deep highly-corrosive wells—Bethlehem's X Mayari Sucker Rod.

X Mayari Rods are made of a special nickel-chromium, naturally-balanced alloy that provides exceptionally high ratio of yield point to tensile strength. This insures high resistance to the shock, corrosion fatigue, and embrittlement encountered in service.

And here's a further factor for complete reliability. From iron ore to finished rod, Bethlehem Sucker Rods are made by one integrated organization, under the eye of one group of engineers and metallurgists. This coordination inevitably produces a rod more closely standardized, more reliable, more certain to give you longer, trouble-free life.

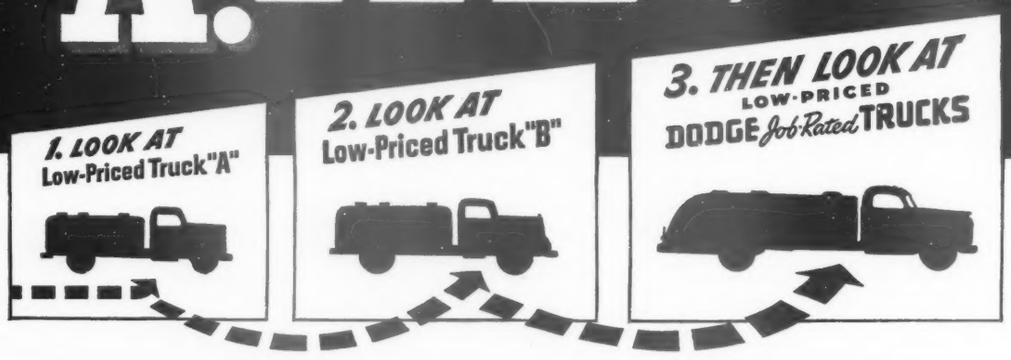
Get a quotation on X Mayari Rods. And try a string. You'll be pleasantly surprised at their low cost and at their performance.

BETHLEHEM STEEL

## BETHLEHEM STEEL COMPANY

# Q. How can I cut my hauling costs?

# A. Look and Save! Buy the One-Two-Three Way...




**COMPARE TRUCKS**—Here's a suggestion that's as free as the air you breathe. And it can save you some money . . . maybe a *lot of money!*

Buy your trucks the one-two-three way! In other words, before you lay your money on the line for any truck, look at Dodge Job-Rated trucks.

**COMPARE QUALITY**—Check and compare all important truck units. Be sure they're the *right* quality and the *right* size in the truck you buy . . . built for the job . . . to stay on the job . . . to save you money!

They will be *right* in a Dodge Job-Rated truck . . . because that's what "Job-Rated" means . . . trucks *built to fit the job!*

When you pay for quality, *get quality* . . . Dodge quality . . . *built-to-last quality* . . . in design, materials and workmanship.

You don't have to pay extra money for such a truck, because Dodge Job-Rated trucks are priced with the lowest. See your Dodge dealer now for a "good deal."

**DEPEND ON DODGE *Job-Rated TRUCKS**

*Job-Rated MEANS A TRUCK THAT FITS YOUR JOB

Better BECAUSE OF CHRYSLER CORPORATION ENGINEERING

**PRICED WITH THE LOWEST**

Chassis .. $500 AND UP (WITH COWL)
Chassis .. $595 AND UP (WITH CAB)
Pick-Ups $630 AND UP
Panels .. $730 AND UP
Stakes .. $740 AND UP

Above prices are delivered at Detroit, Federal taxes included. Transportation, state and local taxes (if any) extra. All prices shown are for ½-ton except stake model which is for ¾-ton. 112 standard chassis and body models available.

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*The Oil and Gas Journal*, issued weekly by The Petroleum Publishing Company, 211 South Cheyenne Avenue, Tulsa, Oklahoma. Subscription price: Domestic, $6.00 a year; foreign, $7.00 a year. Entered as second-class mail matter December 15, 1911, at the post office at Tulsa, Oklahoma, under the Act of March 3, 1879.

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# Thanks to TWO KINDS OF WIRE IN MONARCH PRE-FORMED

**...You Buy Line LESS Often...You Use It LONGER...You Have FEWER Shutdowns**

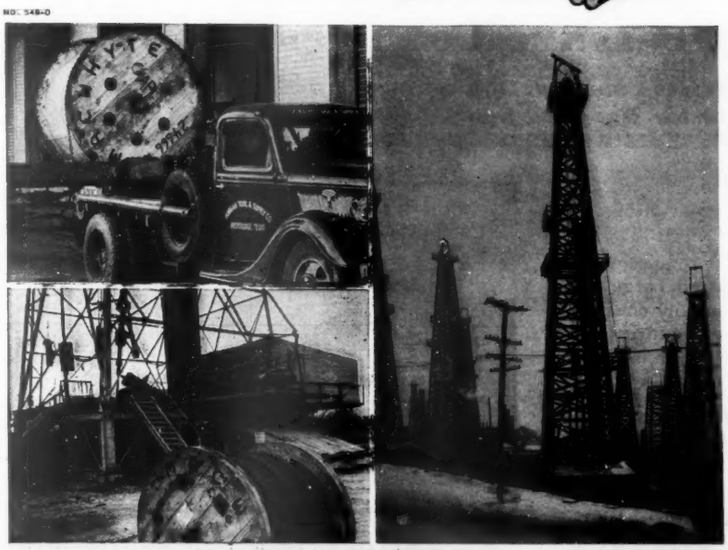
**"INNER WIRES ARE EXTREMELY FLEXIBLE"**

They are improved plow steel wires. They're drawn in a special way to make them extra strong and EXTREMELY PLIABLE. These wires, in Monarch Whyte Strand, bend over sheaves and drums easily, give the rope great reserve strength, long life.

**"OUTER WIRES ARE EXTRA TOUGH"**

Every one is improved plow steel specially drawn for outside service. These wires can really "take it" on your rig. They're the rope's first line of defense against wear, bending abuse and abrasion. They won't give up quickly.

**Then, between and around every wire,** is a specially formulated Macwhyte lubricant that guards those unseen, inside wires. No bearing surface is left uncovered. All are cushioned against abrasion, friction and corrosion. Ask your distributor about Monarch Whyte Strand PREformed.



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*The correct lines for your equipment*

**PRE-FORMED FOR BEST PERFORMANCE**

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*For Continuous* **HEAVY-DUTY SERVICE—**

# Gardner-Denver Single Tandem Two-Stage High Pressure Compressors

**For Natural Gas Pumping, Re-pressuring, Air Starting Service and for Handling Special Commercial Gases**

WHAT are *your* specifications for an air compressor? Do you demand high efficiency and low h.p. requirements—continuous heavy-duty service? Then you'll choose the Gardner-Denver "RXT".

The high volumetric efficiency and low horsepower requirements of this compressor are the result of correct cylinder design. Large and unrestricted valve and port areas, together with the highly effective jacketing of the improved cylinders, reduce the heat of compression, insure effective lubrication with minimum oil consumption, and increase compression efficiency.

**LOW BEARING PRESSURES, AND SMOOTH OPERATION** free from vibration, result from the double-acting construction that equally balances loads in both directions.

**LONG LIFE** is assured by heavy-duty frame and running gear, which, together with the totally enclosed dust-proof construction, means few repairs and low upkeep cost.

**DURABLE VALVES** that actually become tighter with use—Gardner-Denver Duo-Plate "Air-Cushioned" Valves are simple, durable and unusually quiet.

**POSITIVE LUBRICATION** of both cylinders and reciprocating parts is entirely automatic.

**SPECIFICATION TABLE GARDNER-DENVER "RXT" HIGH PRESSURE COMPRESSORS**

| Piston Displ. cu. ft. Per. minute | R. P. M. | Compressor Cylinders (inches) | | |
|---|---|---|---|---|
| | | LP | HP | Stroke |
| *From 150 to 350 Pounds Discharge Pressure* | | | | |
| 105 | 350 | 7 | 3¼ | 7 |
| 191 | 300 | 9 | 4½ | 9 |
| 333 | 285 | 11 | 5 | 11 |
| 410 | 250 | 12 | 6 | 13 |
| *From 350 to 500 Pounds Discharge Pressure* | | | | |
| 76 | 350 | 6 | 2⅝ | 7 |
| 150 | 300 | 8 | 3⅜ | 9 |
| 246 | 285 | 9½ | 4¼ | 11 |
| 343 | 250 | 11 | 5 | 13 |

*Special cylinder combinations for higher pressures are available*

Designed to compress air or gas to pressures of 150 to 500 lb. per sq. in., "RXT" compressors are available in sizes up to 125 h.p. and may be installed with any type of drive. For complete information write Gardner-Denver Company, Quincy, Ill.

# GARDNER-DENVER

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DALLAS • HOUSTON • TULSA • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • NEW YORK • CHICAGO • PITTSBURGH

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YEARS of exhaustive research by Gulf's technologists have produced two superior lines of lubricating greases for ball and roller bearings—greases which provide an extra margin of safety for today's hard pressed equipment.

One, Gulf Anti-Friction Grease, is recommended for heavy duty service. The other, Gulf Precision Grease, is recommended for lighter duty and higher speeds. Both have a high melting point and are specially prepared for greatest resistance to oxidation and separation.

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Both of these superior new lubricants are available in a standardized consistency range in line with the National Lubricating Grease Institute consistency recommendations which went into effect March 1, 1941. Write today for complete information.

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OGJ

Please send me without obligation complete information about your new long life greases for anti-friction bearings.

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# ..AND SO HAS THE DARLING VALVE!

Darling valves are built for action—through year after year—and all of it **easy** action from the operating standpoint. Durability and ease of operation add up to maximum economy in the long run. That's why Darlings are chosen by more and more users in pipe line, refinery and field. When it comes to valves, come to your valve **specialists.** See your Darling representative.

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**WILLIAMSPORT, PA.**
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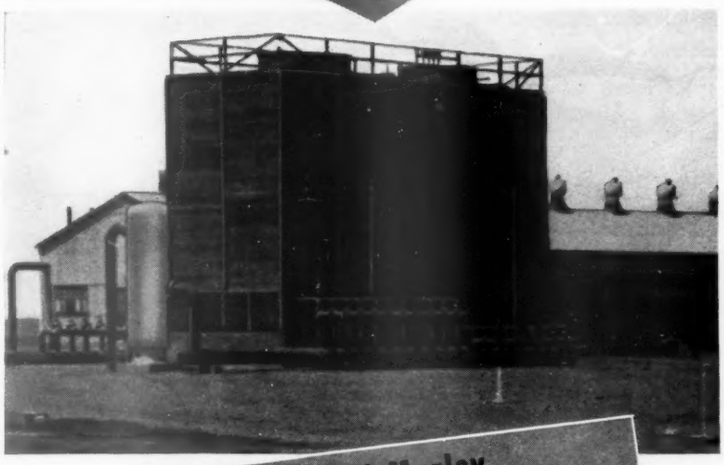
PHILADELPHIA PITTSBURGH HUNTINGTON, W. VA. TOLEDO

# PROOF that NATURAL GAS MEN find Marley "SpraCoil" Cooling Towers SUPERIOR for their Requirements

This is the THIRD Marley "SpraCoil" for one TEXAS Natural Gas Company. 3rd

**COMPANIES HANDLING NATURAL GAS** at their compressor stations and processing plants all over the country are turning to Marley "SpraCoil" Cooling Towers because they meet all the complex cooling requirements comprehensively, conveniently, flexibly, in one highly efficient and dependable unit.

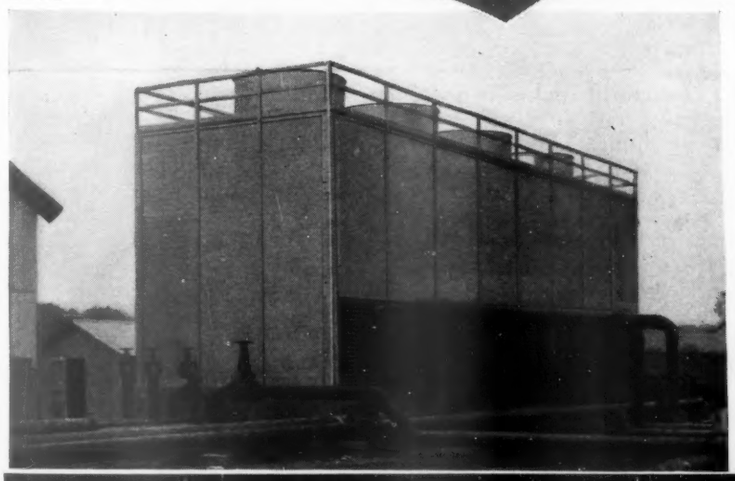


Indicative of the trend are these two companies whose actual experience with the better service received from their first Marley "SpraCoil" Tower led them to install still others when modernizing and expanding existing stations or when building new ones. Many other similar companies now own one and two "SpraCoil" towers. They are really "self-sellers" to engineers who have ever worked with or observed one in operation. Their popularity is just as marked among Diesel power plants and pipe line stations as it is with the natural gas industry.

Now goes its FIFTH Marley "SpraCoil" to one OHIO Natural Gas Company for which this one was the fourth. 5th

If your organization has any job that combines gas cooling, jacket water cooling and process cooling, write now for Marley Bulletin 601 and get the full story of new efficiency, convenience and low cost in meeting your own cooling problems.

4-41-B



**The Marley "SpraCoil" Cooling Tower** provides enclosed cooling of liquids and gases through flexible systems of coils in its base. These coils are externally cooled by sprayed raw water circulated over an induced draft type cooling tower that is the modern criterion of excellence in water cooling engineering . . . structurally, mechanically and in its advanced design.

**The MARLEY Company**
Fairfax and Marley Roads
Kansas City, Kansas

*MARLEY WATER COOLING EQUIPMENT is saving money and promoting efficiency in plants, smallest to largest, in all phases of the oil industry*

# It's tough on the balance sheet...

## SPLITTING CUSTOMERS IN HALF!

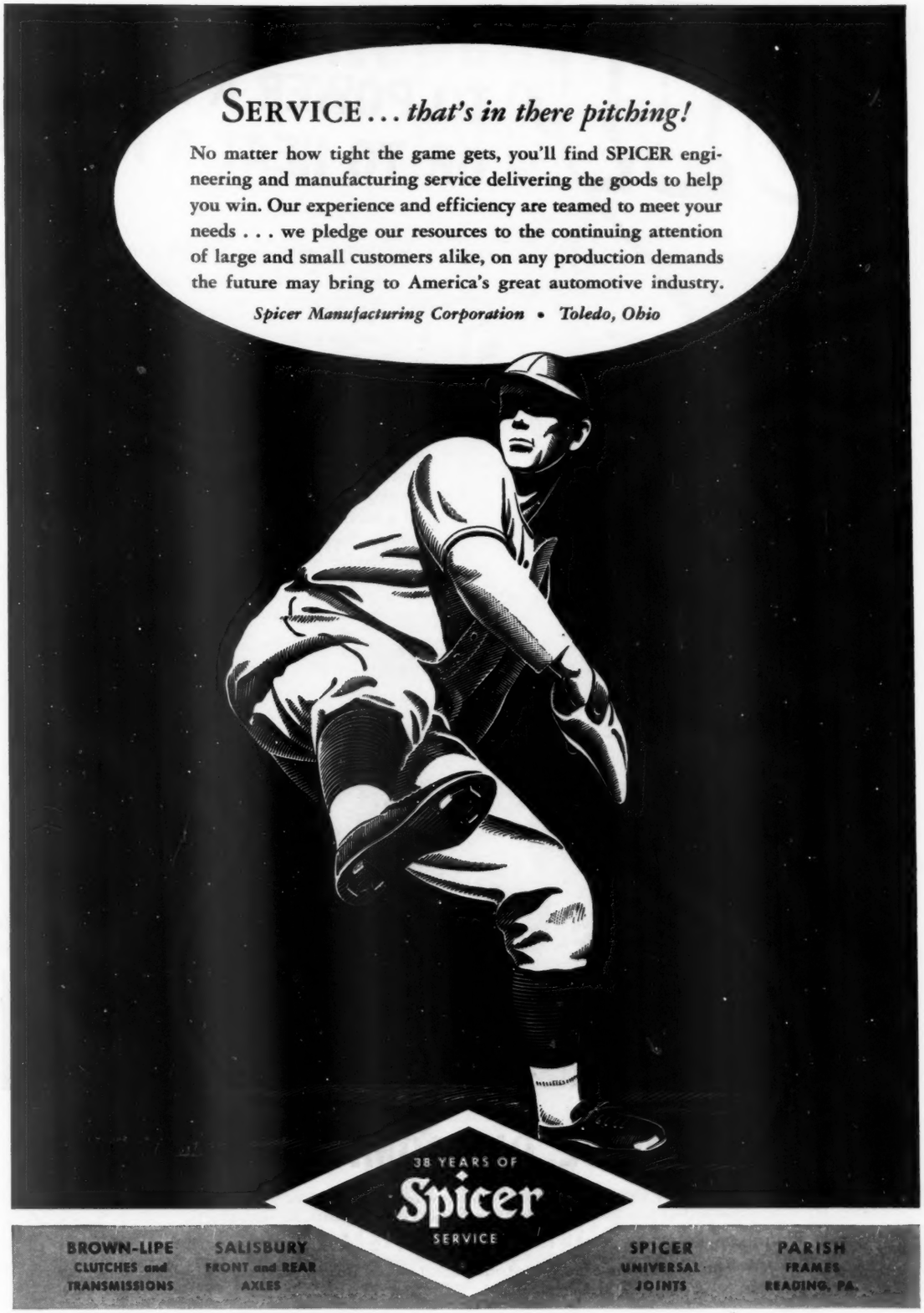
JOBBERS and DEALERS know best customers are mighty choosy about what goes in their crankcases these days! Many a customer will buy his gas in one place and his oil in another.

Why let these "half" customers drive away — when a Pennsylvania Motor Oil would make "whole" customers out of them? The demand for emblem Pennsylvania is enormous. It's something to be reckoned with — and reckoned up — on your own balance sheet! Ask a Pennsylvania Grade Crude Oil Association man, or write us direct.

*Oil City* *Pennsylvania*

MEMBER OF PENNSYLVANIA GRADE
Guaranteed
100% PURE
PENNSYLVANIA
OIL
CRUDE OIL ASSOCIATION
PERMIT NUMBER.....
Made from the highest grade crude oil in the world

**PENNSYLVANIA GRADE CRUDE OIL ASSOCIATION**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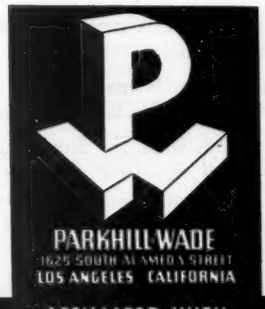
The work will be done on a complete turn-key basis; that is, we will handle all phases of design—all special equipment will be fabricated in our own manufacturing plant—construction work will be done by our own field personnel.

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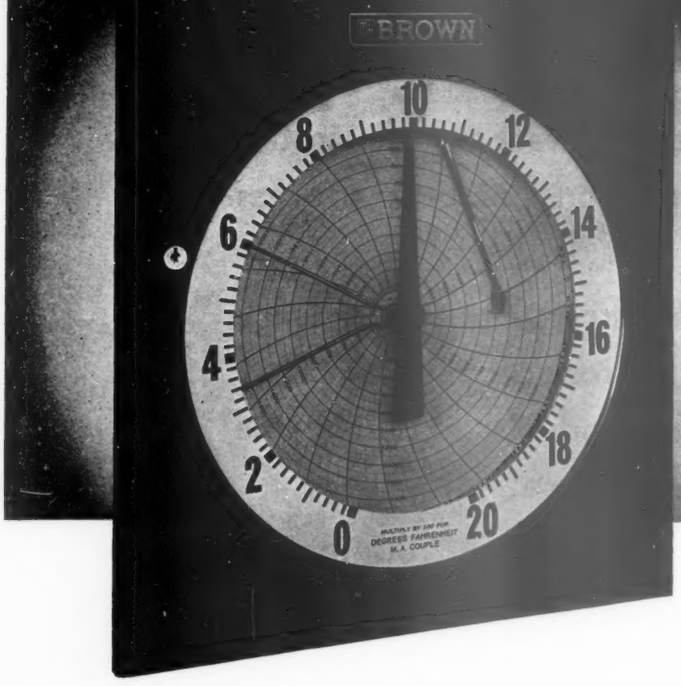
**THE STEARNS-ROGER MANUFACTURING CO.**

1720 CALIFORNIA STREET • DENVER, COLO.

# BROWN ANNOUNCES *A New* OPERATING PRINCIPLE

IN TEMPERATURE MEASUREMENT




The New Brown Circular Chart Potentiometer
NEW OPERATING PRINCIPLE . . . . .
. . . . . NO GALVANOMETER

THE new, exclusive Brown "CONTINUOUS BALANCE" Power Unit replaces the conventional galvanometer . . . provides high precision . . . responds instantly to minute variations . . . maintains Continuous Balance in the measuring and recording of temperatures. . . . brings to industry an advanced and practical embodiment of *electronics.*

The new Brown Circular Chart Potentiometer Pyrometer is built to withstand severe plant service. . . . Its fundamental principle and simple construction make it vibration-proof. . . . Wear is reduced to a minimum because there is no mechanical motion except when the temperature changes.

Interchangeable with present pyrometer installations . . . utilizes standard thermocouples and wiring.

HERE is combined in one instrument . . . SENSITIVITY . . . RUGGEDNESS . . . SIMPLICITY . . . PRECISION.

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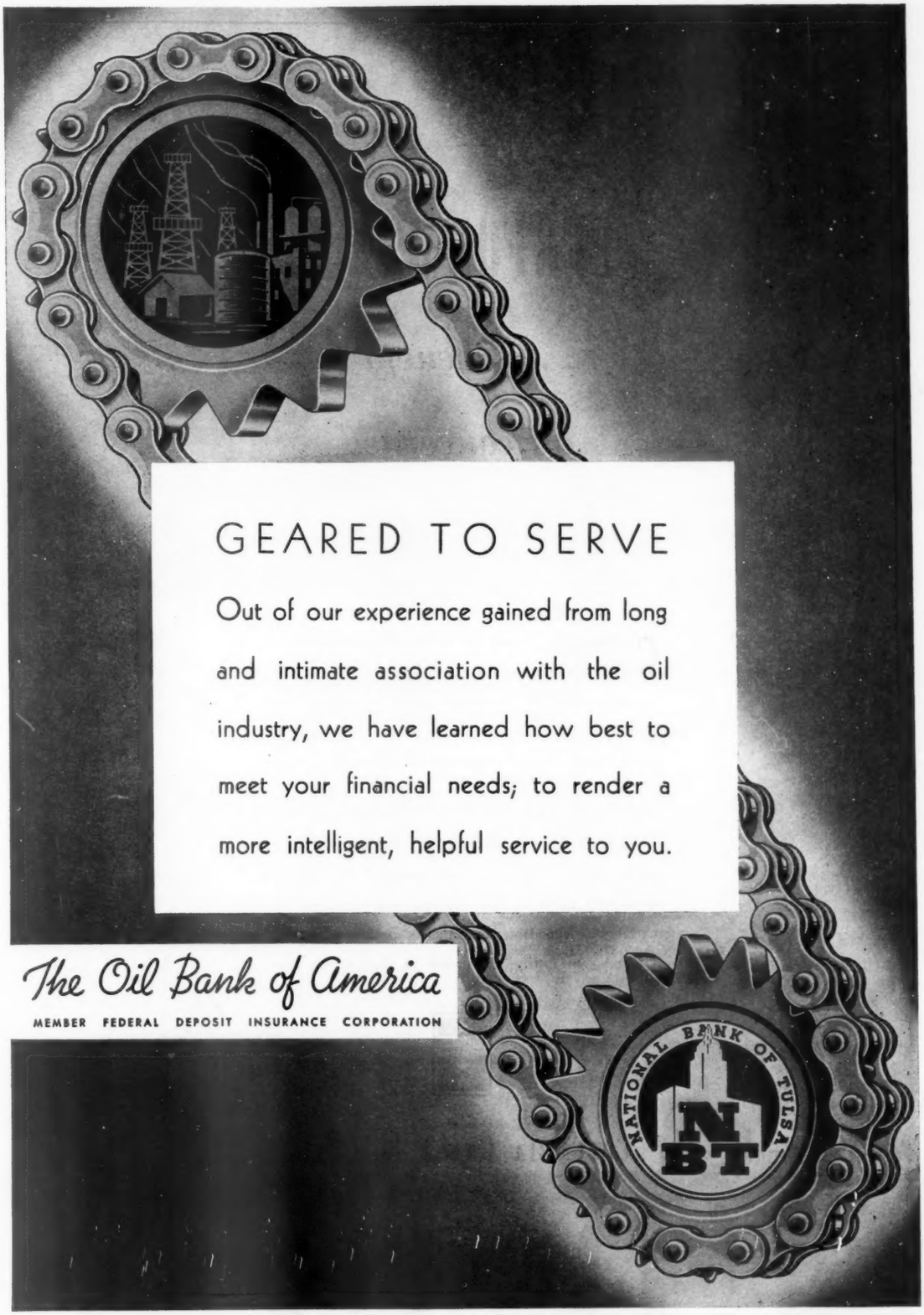
BROWN

POTENTIOMETER PYROMETERS
and
MINNEAPOLIS-HONEYWELL CONTROL SYSTEMS

*To Measure and Control is to Economize*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Out of our experience gained from long and intimate association with the oil industry, we have learned how best to meet your financial needs; to render a more intelligent, helpful service to you.
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MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION
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# PERFORMANCE

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COLUMBIA SYSTEM

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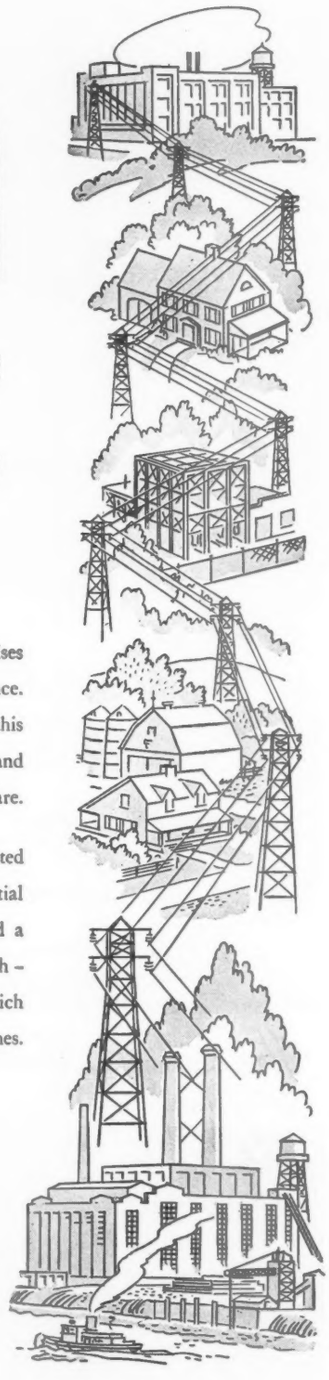
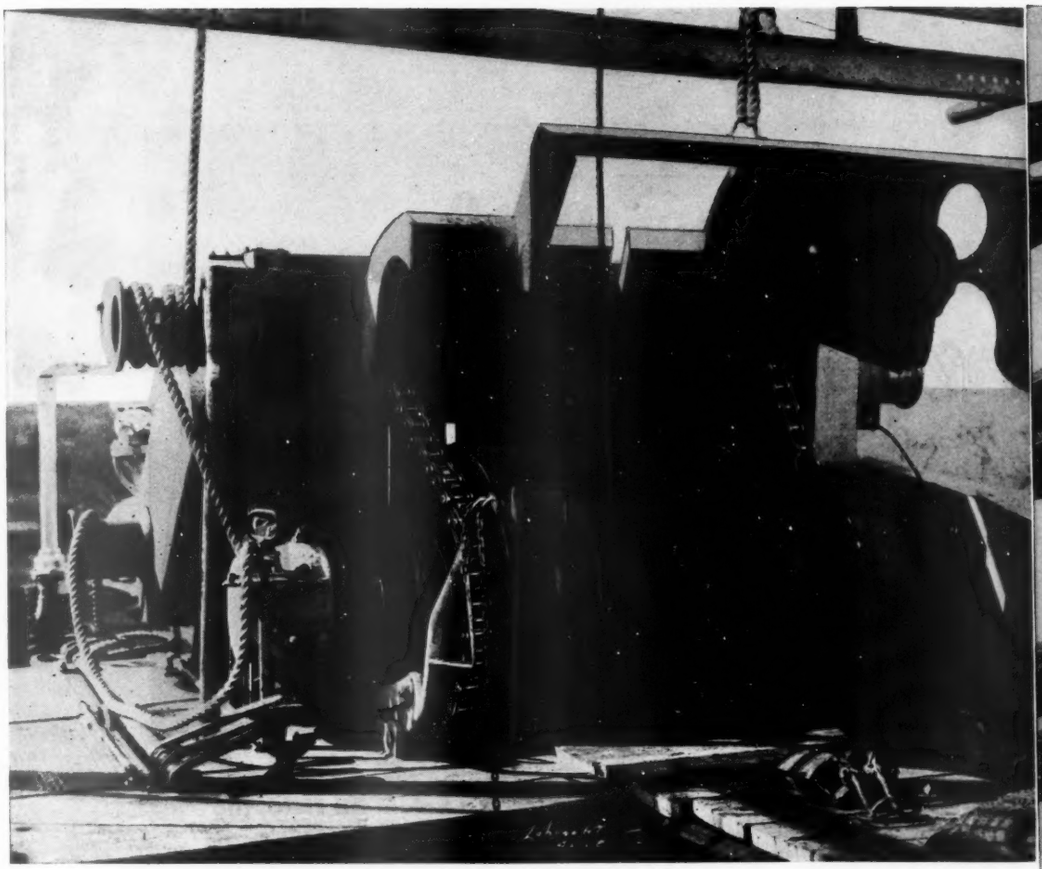
**CORPORATION**





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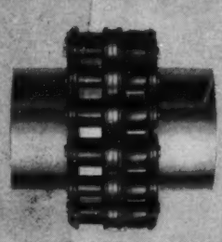
BALDWIN MULTIPLE ROLLER CHAINS
FOR DRIVES UP TO 500 H.P.



BALDWIN ROLLER CHAIN
FLEXIBLE COUPLINGS

# *See for Yourself*

## WHAT YOU CAN DO WITH ALL THE POWER ALL THE TIME!

If you've never used Baldwin chains on your rigs, it's very likely that you are unaware of what *all* the power *all* the time can mean. For there are mighty few oil field chains with Baldwin-like ability to transmit power with true 98.6% efficiency, with maximum life and minimum sprocket wear in high-speed, deep drilling service.

Perhaps you are like some of those who thought oil well chains were all alike—and then had to change their minds when they tried Baldwin on their own rigs. Try Baldwin—you too will be "sold" on their smooth-running, trouble-free, long-lasting service.

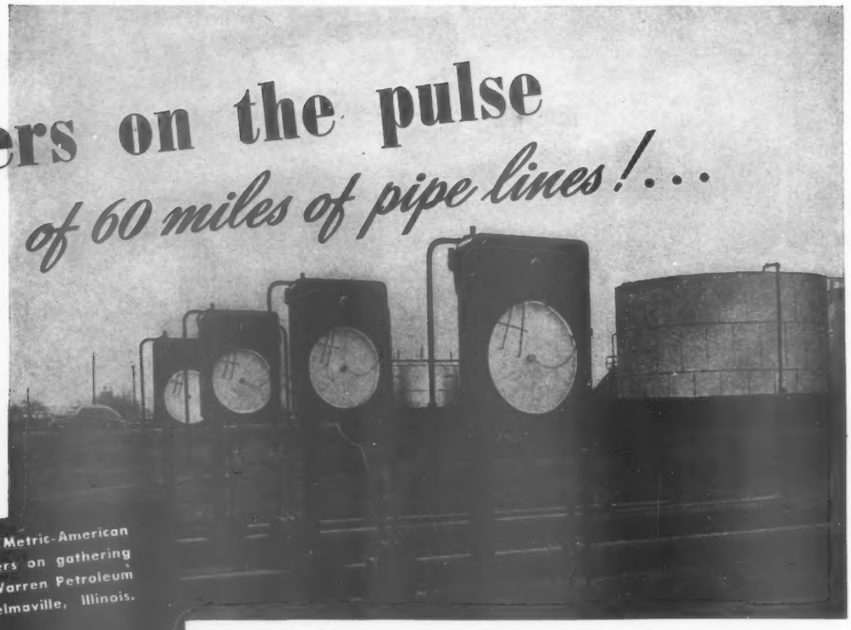
See for yourself why Baldwin is so popular wherever they drill for oil. The three rotary chains shown here and multiple strand roller chains are available at an oil field supply store near you. Investigate.

*For sale in all oil fields.*

**BALDWIN-DUCKWORTH**
*Division of Chain Belt Company*
340 Plainfield St., Springfield, Mass.
*Factories in Springfield and Worcester, Mass.*

# BALDWIN CHAINS TRANSMIT ALL THE POWER

# fingers on the pulse *of 60 miles of pipe lines!...*



Central meter setting of Metric-American Recording Orifice Meters on gathering system of gas at the Warren Petroleum Corporation plant, Selmaville, Illinois.

Typical gas field line application of Metric-American Recording Orifice Meter, at Warren Petroleum natural gasoline plant.

**Out in the famous Salem Oil Field, the Warren Petroleum Corporation is demonstrating to the industry new wrinkles in the recovery of iso-butane and other products . . . in big-scale operations.**

▷ **Scores of METRIC-AMERICAN Orifice Meters of the "Westcott" Recording type—installed on field and gathering pipe-lines — accurately meter the vast flow from more than 700 wells . . . some 20,000,000 cubic feet of gas delivered daily to Warren's modern new natural gasoline plant.**

▷ **Accuracy is a prime requisite — in the orifices, and in instrument assembly. "Westcott" dependably supplies this accuracy . . . through design simplification, exclusive features in sensitive operating mechanism, and provision for easy low-cost maintenance.**

▷ **There's considerable satisfaction in knowing what AMERICAN measurement engineering today is contributing to the efficiency of field operations which yearly set new standards. May we tell you the story in detail if you do not have it?**

METRIC METAL WORKS • ERIE PA

AMERICAN METER COMPANY

1596

# *Octane saved—costs cut*

Some time ago a certain Mid-Continent refiner found that his treating operation was robbing his good Dubbscracked gasoline of about 1.5 octane numbers while chemicals were costing him nearly 5 cents per barrel treated

He went to work at once on the problem and he called in a Universal refining specialist to help

Together they discovered the trouble and found the cure The refiner applied it at once

And here is the result

Octane loss has been reduced to half a number and the cost of litharge, caustic, sulfur and U. O. P. inhibitor per barrel treated has been cut in half

Operating problems vary widely in different refineries

Universal refining specialists are studying them all the time—and helping to solve them

Maybe they can help you

Why don't you find out now?

**Universal Oil Products Co**
**Chicago, Illinois**

**Dubbs Cracking Process**
**Owner and Licensor**

# *can you tell how far he can jump?*

**WICKWIRE ROPE**

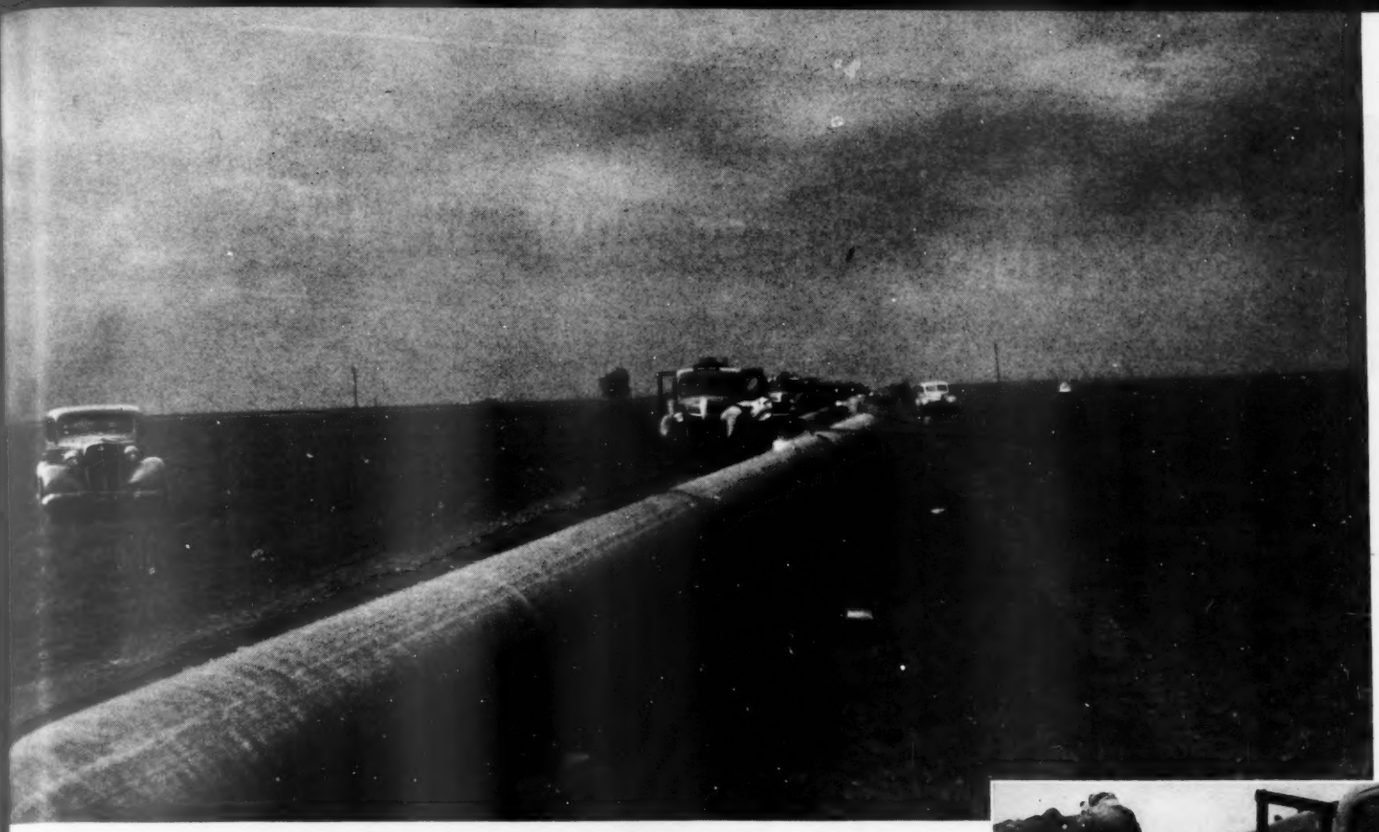
**Neither can you tell from looking at Wickwire Rope how much more service it gives than usual high grade wire ropes. Use alone will prove it.**

**We invite this comparison. Install a Wickwire Rope of the design recommended by our representative. Use it to destruction. Then compare its per-unit-of-use cost with that of any other rope you have ever used. Our bid for your business is based upon your attaining lower rope costs.**

**While Wickwire Rope is premium quality, its price-per-foot is no more than other recognized brands.**

**WICKWIRE SPENCER STEEL COMPANY**

General Offices: 500 Fifth Avenue, New York City; Sales Offices and Warehouses: Worcester, New York, Chicago, Buffalo, San Francisco, Los Angeles, Tulsa, Chattanooga, Houston, Abilene, Texas, Seattle. Export Sales Department: New York City



*Electric Welding 26-in. Plain End Pipe in Texas Panhandle*

# ANOTHER ADVANCE IN PIPE LINE WELDING

## SOLID WELDED 26-INCH GAS LINE ELECTRIC WELDED WITHOUT BACKING-UP RING

**By constant improvement of field welding technique and the development of special equipment, H. C. Price Co. is now electric welding large diameter gas lines without the use of backing-up rings. This insures further economy and efficiency in long transmission lines.**

**H. C. Price Co. was the pioneer in electric welding of pipe lines and has welded a large majority of the electric welded pipe lines in the United States. The company specializes exclusively in this one operation.**

**Specify PRICE-WELDED Field Joints**

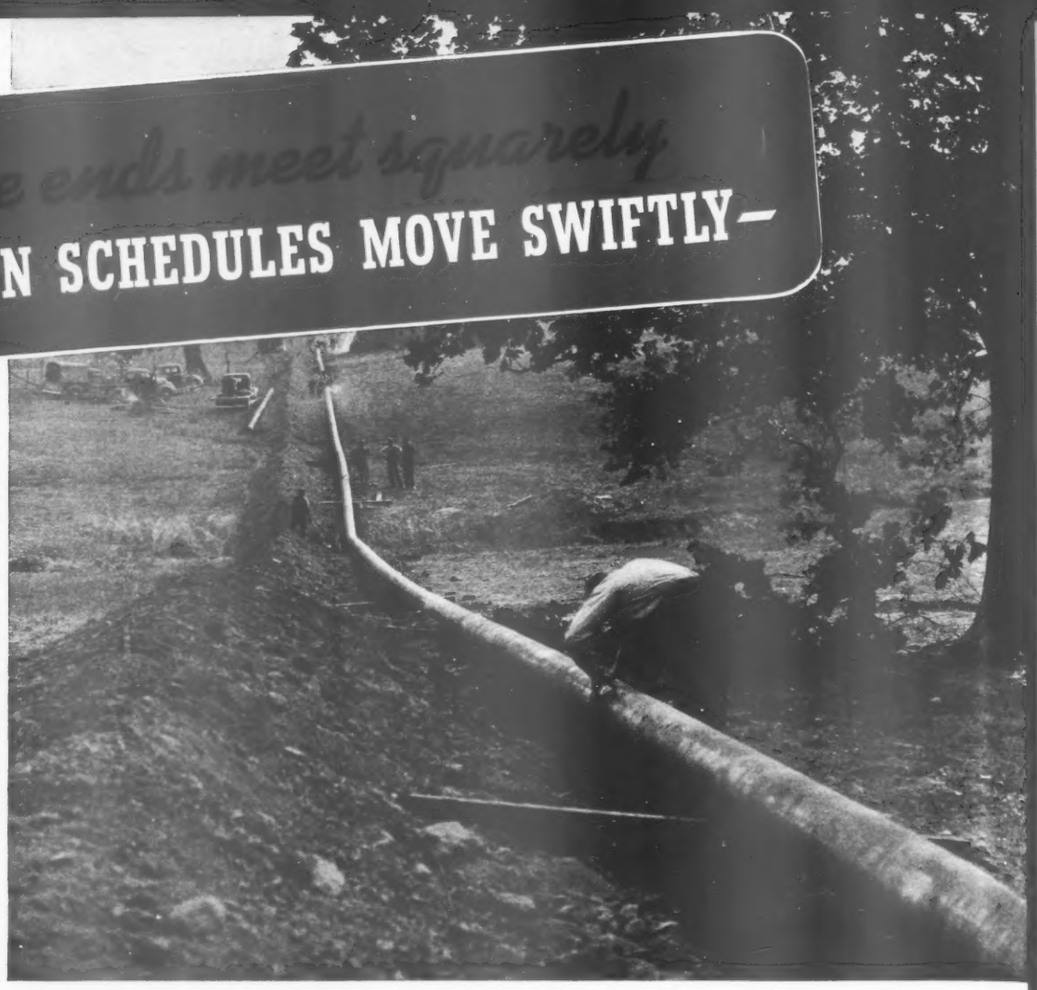
**H. C. PRICE CO.**

**BARTLESVILLE, OKLA.**

**SAN FRANCISCO, CAL.** **LOS ANGELES, CAL.**

*Because ends meet squarely*

# CONSTRUCTION SCHEDULES MOVE SWIFTLY—



*Inspecting a field weld in a ten-inch line of Republic Electric Weld Line Pipe*

**MORE STEEL**

Many times during the past decade observations were made and often appeared in print to the effect that the steel production facilities of this country were being over-expanded.

Republic was not deterred by these prophecies — but went ahead with an extensive program of plant expansion — enlarging blast furnace, electric furnace and rolling mill capacities — building a loyal force of men in plants and offices.

Now, when all American industries need more steel than ever before, Republic's men and machines are setting new records for steel production, — doing their utmost to help manufacturers of every type of product by supplying more and better ***steel — first line of national defense.***

R. J. Wysor
PRESIDENT

● Republic Electric Weld Line Pipe is formed from accurately flat rolled steel. This gives uniform wall thickness at the ends where field welds are made. Every length is perfectly round. This means that each length joins accurately with each connecting length, again helping to make better welds faster. Add to these features long lengths, ductility for easy bending, and the construction advantages of this improved line pipe are apparent. And in sizes up to 16-inch O. D. we can ship Republic Electric Weld Line Pipe faster than you can lay it.

*Read "The Pipe of Progress". Every feature of Republic Electric Weld Line Pipe described in this book will prove its time-saving qualities in the field. Copy on request.*

REPUBLIC STEEL CORPORATION

Howard Supply Company, Los Angeles, California — General Offices: Cleveland, Ohio — Republic Supply Company, Houston, Texas

BERGER MANUFACTURING DIVISION • CULVERT DIVISION • NILES STEEL PRODUCTS DIVISION
STEEL AND TUBES DIVISION • UNION DRAWN STEEL DIVISION • TRUSCON STEEL COMPANY

REPUBLIC ELECTRIC WELD

**LINE PIPE—NORMALIZED CASING AND TUBING**

# THE AMERICAN'S CREED

"Breathes there a man with soul so dead, who never to himself hath said, this is my own, my native land."

SCOTT

I believe in the United States of America, as a government of the people, by the people, for the people; whose just powers are derived from the consent of the governed; a democracy in a republic; a sovereign nation of many sovereign states; a perfect union, one and inseparable; established upon those principles of freedom, equality, justice and humanity for which American patriots sacrificed their lives and fortunes.

I therefore believe it is my duty to my country to love it, to support its constitution, to obey its laws, to respect its flag, and to defend it against all enemies.

The American's Creed by William Tyler Page was adopted by an Act of Congress, April 6, 1918.

THE LOUIS ALLIS CO., MILWAUKEE WIS.

LOUIS ALLIS

# A Size and Type Electric Motor for Every Industrial Requirement

***Standard open SQUIRREL CAGE** polyphase motors are carefully engineered, precision built motors with rigid construction throughout and adequate insulation you can confidently apply to your toughest jobs.*

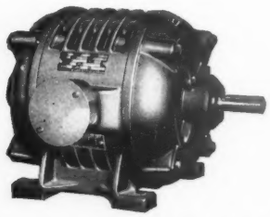
**SPLASH-PROOF** motor. Designed and built from the ground up as a real splash-proof motor—full protection against acid spills—splashing liquids—high humidity. Completely protected by cast iron housing.

***TOTALLY ENCLOSED FAN COOLED** motors—for operation in atmospheres containing abrasive dust, corrosive fumes, dirt, oil, combustible dust, and similar conditions such as are usually found in machine shops, foundries, chemical plants, grain elevators, coal pulverizing plants, etc.*

**These DIRECT CURRENT motors are correctly engineered and precision built—available in a very wide range of both electrical and mechanical modifications. The extra rugged construction of these motors cssures long life of dependable performance.**

*This PROTECTED D. C. motor has the same general construction features of the motor illustrated above. The specially designed protective end bell and armature coverings make this motor especially adaptable for use in coal mines, quarries, or where dropping particles may hit the motor.*

**These Direct Current EXPLOSION-PROOF motors have been inspected and explosion-tested by the Bureau of Mines Laboratory. Also tested, listed and appoved by the Underwriters' Laboratories for all Class I, Group D explosive atmospheres.**



***A complete line of enclosed NON-VENTILATED motors is available in a wide range of mechanical and electrical characteristics. These motors are ruggedly constructed with solid cast iron housings to withstand severe treatment on difficult jobs.***

**These WOUND ROTOR (slip ring) motors are ruggedly constructed throughout. A wide range of speed variations are obtainable with comparatively simple control. Available with mechanical modifications for every industrial use.**

***Louis Allis motors can be supplied with a very wide range of various types of gear reducers—integral—all-motor—gear-head—vertical—right angle or parallel—the proper drive for every industrial application.***

***No matter what your electric motor problem or requirement may be—we earnestly request your inquiry. Your needs will receive our most prompt and careful attention in every way.***

## THE LOUIS ALLIS CO., MILWAUKEE, WISCONSIN

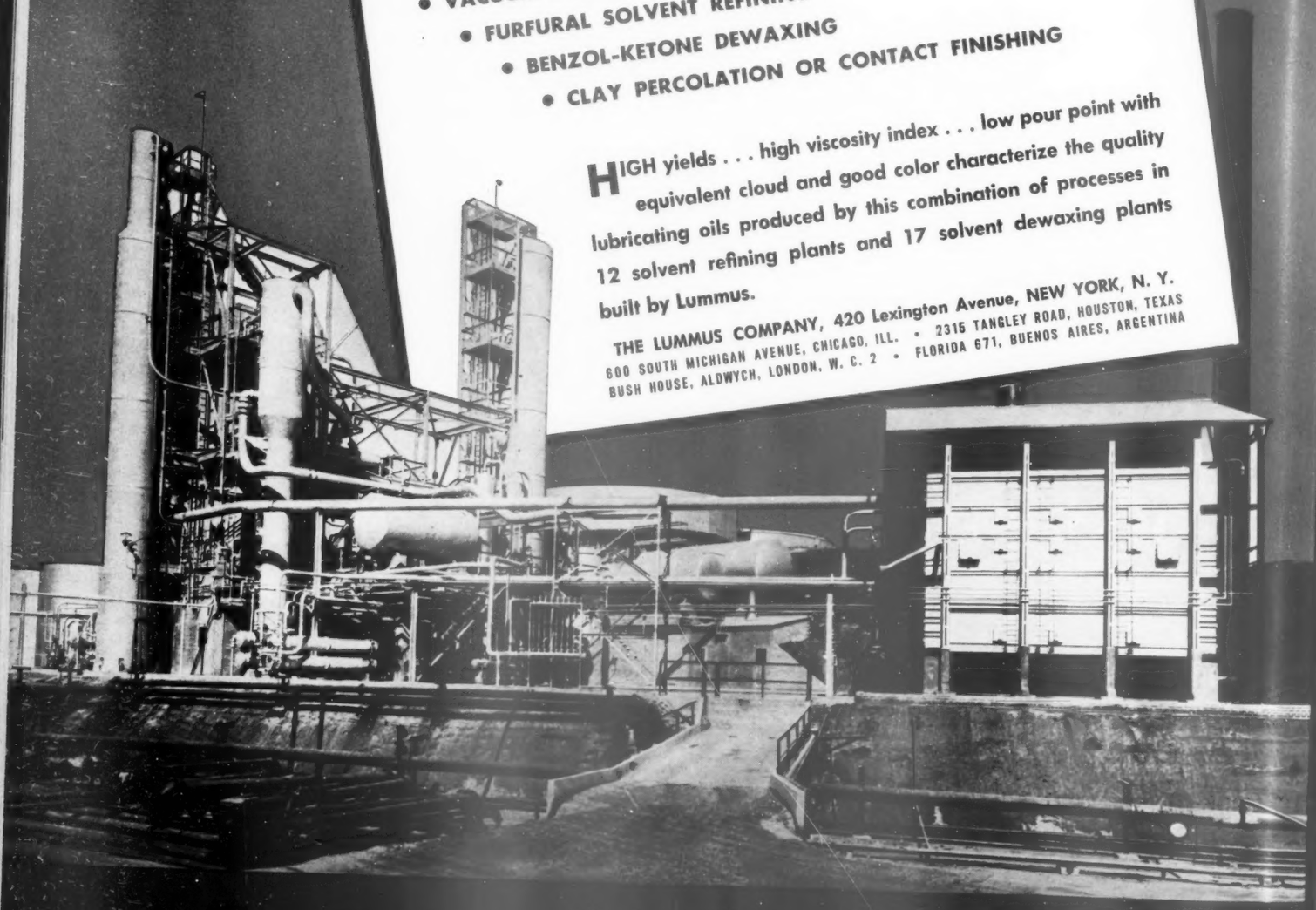
MEET THE DEMAND for High Grade Lube Oils . . .

# THESE CO-ORDINATED PROCESSES Produce *High Grade Lubricating Oils* At Low Investment and Low Operating Costs

- VACUUM DISTILLATION OR PROPANE DEASPHALTIZING
- FURFURAL SOLVENT REFINING
- BENZOL-KETONE DEWAXING
- CLAY PERCOLATION OR CONTACT FINISHING

HIGH yields . . . high viscosity index . . . low pour point with equivalent cloud and good color characterize the quality lubricating oils produced by this combination of processes in 12 solvent refining plants and 17 solvent dewaxing plants built by Lummus.

THE LUMMUS COMPANY, 420 Lexington Avenue, NEW YORK, N. Y.
600 SOUTH MICHIGAN AVENUE, CHICAGO, ILL. • 2315 TANGLEY ROAD, HOUSTON, TEXAS
BUSH HOUSE, ALDWYCH, LONDON, W. C. 2 • FLORIDA 671, BUENOS AIRES, ARGENTINA



LUMMUS

PETROLEUM REFINING PLANTS

YOU CAN RELY ON

# SPANG PACKERS

Fig. 511
WELDLESS
JAR

Fig. 524
TWISTED
BIT

The HIGHER STANDARD

SPANG AND COMPANY
Butler, Pa.

Fig. P-154
HOOK-WALL
PACKER

Fig. P-137
TUBING-ANCHOR
PACKER

Fig. P-180
COMBINATION
WALL & ANCHOR
PACKER

Fig. 505
PROSSER-TYPE
ROPE SOCKET

Fig. 517

Fig. 516
BOX & PIN

# SPANG THE BIGGEST NAME IN CABLE TOOLS

## "THIS REEL OF TIGER BRAND SET A NEW RECORD"

*A Tiger Brand Wire Line Engineer reports to his boss . . .*

Drove out to the McGordon location this morning, talked to the boys awhile and started to look at a big reel of American Tiger Brand they had out there.

The Superintendent drove up about that time and walked over, laid his hand on the reel and said, "Here's the best wire line we've ever had--this reel of Tiger Brand set a new record. Have yet to hear of another line in the field that can touch it in ton-mileage."

You don't have to stop and figure out why this outfit will use only American Tiger Brand Wire Lines!

*Bill*

YOU can safely turn your wire line problems over to an American Tiger Brand Wire Line Engineer. These men spend their time where lines are being used — they know what punishment they have to take, and what you can do about stretching your wire line dollar. They know wire lines—and they know their job. When you need help, call one of them. You can rest assured that you'll get the most practical recommendations—and in a hurry, too!

American Tiger Brand Wire Lines are made in all constructions and grades, and are quickly available throughout the oil fields. Write us for details, and ask for one of our engineers to call and check over your lines—no obligation at all.

**AMERICAN**
*Tiger Brand*
**WIRE LINES**
Excellay Preformed

**LOOK FOR THE TIGER**
Buy wire lines from the distributor who displays this sign.

**AMERICAN STEEL & WIRE COMPANY**
*Cleveland, Chicago and New York*
**COLUMBIA STEEL COMPANY**
*San Francisco*
United States Steel Export Company, New York

**UNITED STATES STEEL**

# THUMBS UP for HAZARD WIRE LINES

HAZARD LAY-SET Preformed Green Strand is more and more becoming the standard rotary drilling line in all fields because it lasts longer—resists whipping—makes possible faster round trips. LAY-SET Preformed handles easier, spools better, *is safer*. Hazard LAY-SET has proved its superiority over and over again in practically *all* fields. And when you use Green Strand LAY-SET, you know it is made of Improved Plow Steel—the long-life, greater dollar value line.

HAZARD Nonpareil Brand has long been preferred by cable tool drillers. This is one of the lines that is backed by nearly a century of wire rope making experience. It is known to "old timers" and younger drillers, tool pushers and superintendents as the line that "gets the job done." Hazard men are wire line engineers. They know the exact wire rope construction and grade for each application. They will be glad of the opportunity to help you get greater dollar value.

*The Green Strand Identifies Hazard Wire Ropes Made of Improved Plow Steel*

HAZARD WIRE ROPE DIVISION • *Established 1846* • WILKES-BARRE • PENNSYLVANIA
AMERICAN CHAIN & CABLE COMPANY, INC.
BRANCHES OR DISTRIBUTORS IN ALL IMPORTANT OIL FIELDS

ACCO

GREEN SIGNIFIES SAFETY

Yes..
there are No pipe thread
worries with
HUGHES
FLASH-WELD
TOOL JOINTS!
Today's drilling with high speeds, deeper horizons, and a maximum effort to drill fast, straight hole calls for a stronger Drill Pipe and Tool Joint Assembly.
Hughes Flash-Weld Tool Joints answer this problem by eliminating pipe end threads and pipe end thread failures.

**HUGHES TOOL COMPANY** · HOUSTON TEXAS